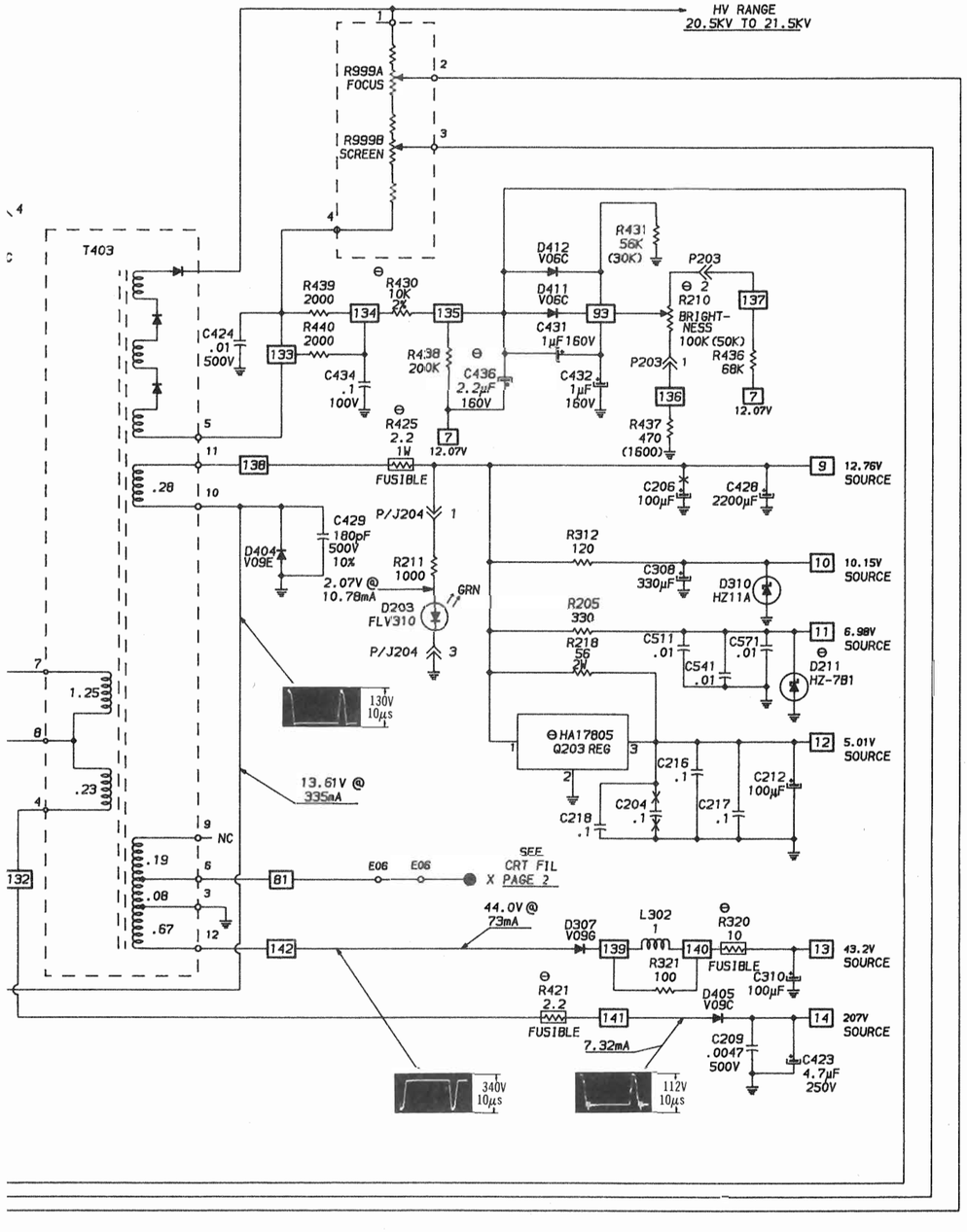
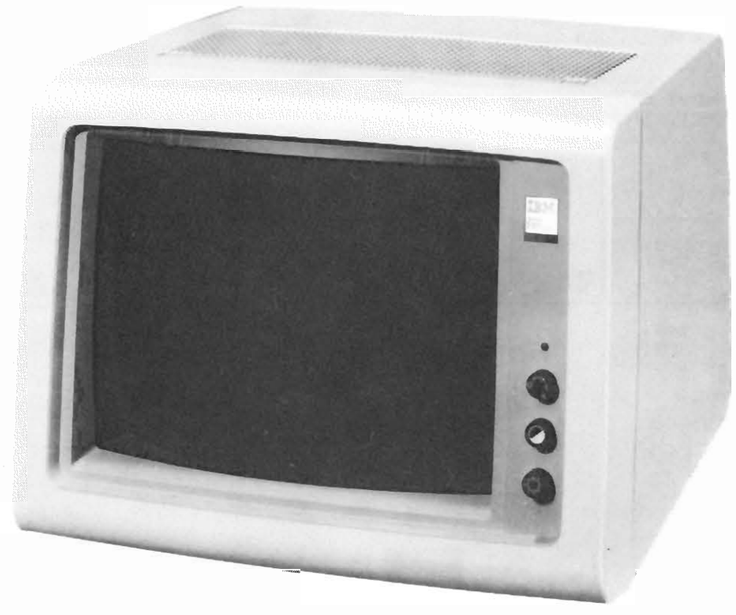


CMT4-2 IBM MODEL 5153



MODEL 5153

CMT4-2 IBM MODEL 5153

PRELIMINARY SERVICE CHECKS

ENCLOSED

INDEX

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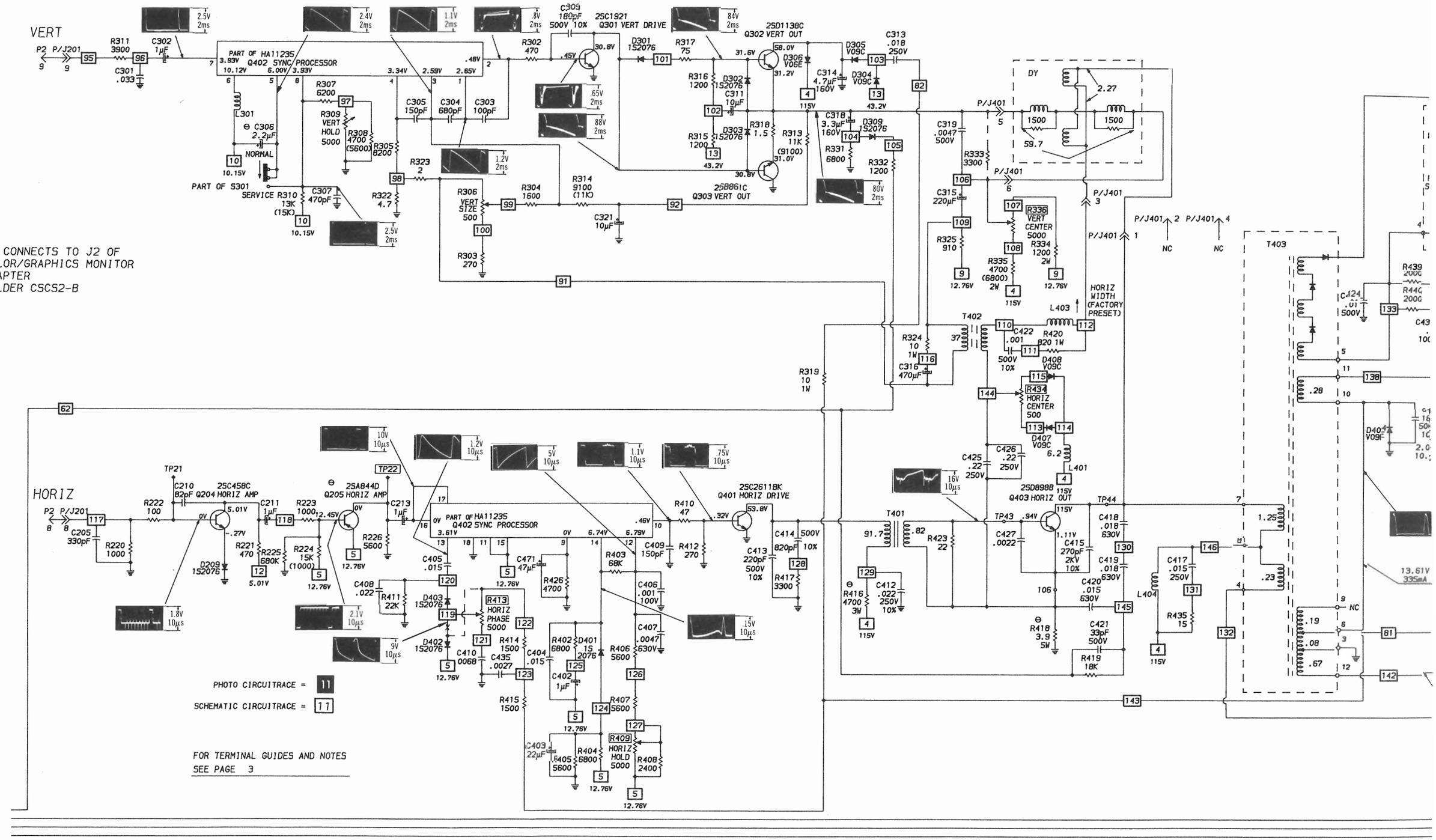


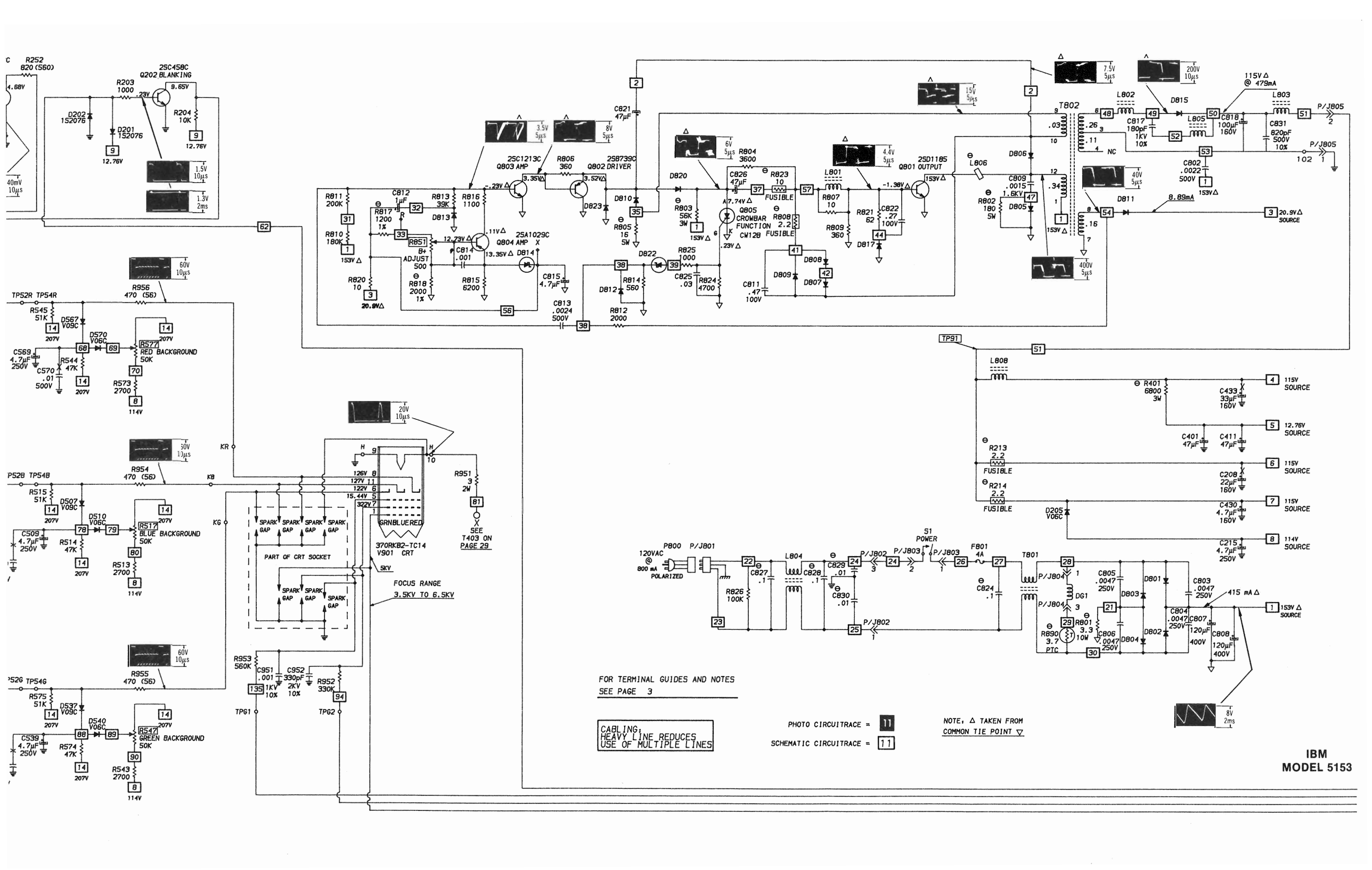
P2 CONNECTS TO J2 OF
COLOR/GRAPHICS MONITOR
ADAPTER
FOLDER CSCS2-B

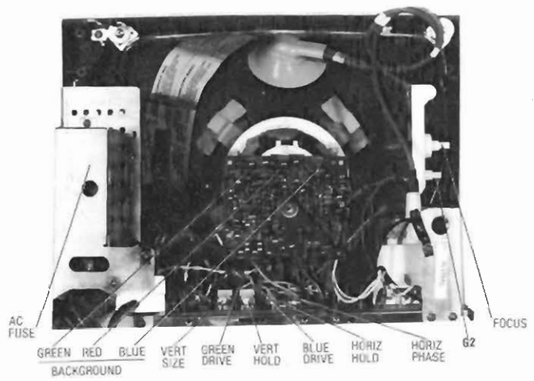
RED

BLUE

GREEN

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®


R252 820 (560)
4.68V
40mV 10µs
R203 1000
25C458C Q202 BLANKING
.23V
9.65V
R204 10K
D202 1S2076
D201 1S2076
9 12.76V
9 12.76V
1.5V 10µs
1.3V 2ms
62
60V 10µs
R956 470 (56)
TP52R TP54R
R545 51K
D567 V09C
D570 V06C
R577 RED BACKGROUND 50K
C569 4.7µF 250V
C570 .01 500V
R544 47K
R573 2700
207V
114V
30V 10µs
R954 470 (56)
KR
KB
KG
P52B TP54B
R515 51K
D507 V09C
D510 V06C
R517 BLUE BACKGROUND 50K
C509 4.7µF 250V
R514 47K
R513 2700
60V 10µs
R955 470 (56)
P52G TP54G
R575 51K
D537 V09C
D540 V06C
R547 GREEN BACKGROUND 50K
C539 4.7µF 250V
R574 47K
R543 2700
20V 10µs
H 9
H 10
126V 8
127V 11
122V 6
15.44V 5
322V 7
1
GRNBLUERED
370RKB2-TC14 V901 CRT
SKV
FOCUS RANGE 3.5KV TO 6.5KV
PART OF CRT SOCKET
SPARK GAP
R951 3 2W
81
SEE T403 ON PAGE 29
R953 560K
C951 .001 1KV 10%
C952 330pF 2KV 10%
R952 330K
135
94
TPG1
TPG2
3.5V 5µs
8V 5µs
C821 47µF
2SC1213C Q803 AMP
R806 360
2SB739C Q802 DRIVER
3.35V
3.52V
-.23V
D823
D810
35
R805 16 5W
R811 200K
R810 180K
31
1
153V
C812 1µF
R817 1200 1%
32
R813 39K
R816 1100
D813
33
R851 B+ ADJUST 500
R818 2000 1%
R820 10
3
20.8V
12.73V
.11V
C814 .001
2SA1029C Q804 AMP X
13.35V
D814
R815 6200
C815 4.7µF
C813 .0024 500V
56
38
D820
R803 56K 3W
R804 3600
6V 5µs
C826 47µF
37
R823 10 FUSIBLE
A 7.74V
Q805 CROWBAR FUNCTION CW12B
R808 2.2 FUSIBLE
.23V
57
6
D822
R825 1000
39
C825 .03
R824 4700
D812
R814 560
R812 2000
38
41
D808
D809
D807
42
C811 .47 100V
4.4V 5µs
L801
R807 10
R809 360
C822 .27 100V
44
D817
2SD1185 Q801 OUTPUT
-1.38V
153V
15V 5µs
7.5V 5µs
200V 10µs
2
T802
9
.03
10
.26
3
.11
4
NC
12
.34
1
8
.16
7
153V
L806
D806
C809 .0015 1.6KV
47
D805
R802 180 5W
D811
40V 5µs
400V 5µs
8.89mA
54
3 20.9V SOURCE
L802
D815
115V @ 479mA
L803
P/J805
6
48
49
50
51
2
C817 180pF 1KV 10%
L805
C818 100µF 160V
C831 820pF 500V 10%
52
53
C802 .0022 500V
1
153V
P/J805
102
1
TP91
51
L808
R401 6800 3W
C433 33µF 160V
4 115V SOURCE
C401 47µF
C411 47µF
5 12.76V SOURCE
R213 2.2 FUSIBLE
R214 2.2 FUSIBLE
C208 22µF 160V
6 115V SOURCE
D205 V06C
C430 4.7µF 160V
7 115V SOURCE
C215 4.7µF 250V
8 114V SOURCE
P800 120VAC @ 800 mA POLARIZED
P/J801
22
23
C827 .1
R826 100K
L804
C828 .1
C829 .01
C830 .01
24
3
P/J802
25
1
P/J802
24
2
S1 POWER
P/J803
1
P/J803
26
F801 4A
27
C824 .1
T801
28
P/J804
1
DG1
P/J804
3
29
R801 3.3 10W
R890 3.7 PTC
30
C805 .0047 250V
C806 .0047 250V
21
D803
D804
D801
D802
C804 .0047 250V
C807 120µF 400V
C808 120µF 400V
C803 .0047 250V
415 mA Δ
1 153V Δ SOURCE
8V 2ms
FOR TERMINAL GUIDES AND NOTES SEE PAGE 3
CABLING; HEAVY LINE REDUCES USE OF MULTIPLE LINES
PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11
NOTE, Δ TAKEN FROM COMMON TIE POINT ▽
IBM MODEL 5153



CABINET-REAR VIEW
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove two caps from cabinet top and remove two screws holding cabinet to cabinet front. Remove four screws (from bottom) holding cabinet back to cabinet front and remove back.

Disconnect HV anode, CRT socket and ground leads. Remove two screws (from bottom) holding main chassis assembly to cabinet bottom and remove assembly from cabinet.

Remove four screws holding AC power assembly to power supply assembly and main chassis. Remove assembly and disconnect connectors as required. Remove five screws holding power supply assembly to main chassis assembly and cabinet front brace and remove power supply assembly. Remove four screws holding power supply cover and lift cover off power supply. Remove five screws holding power board to chassis, disconnect connectors and lift board out of chassis.

Remove knobs from cabinet front. Remove three screws holding control indicator assembly to cabinet front and remove assembly from cabinet.

CRT REMOVAL

CAUTION: Set employs CRT with neck assemblies permanently bonded to CRT. **Do Not** attempt to remove neck assemblies from CRT.

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Remove four screws holding CRT to cabinet front and lift CRT out of cabinet. **Do Not** lift CRT by the neck.

SERVICING IN THE FIELD

CRT IMPLOSION PROTECTION AND CLEANING

Implosion protection is an integral part of the picture tube, cleaning accomplished without CRT removal.

FUSE DEVICES

A 4-amp fuse is used for AC line protection. (See photo, Cabinet- Rear View.)

LAMP ACCESSIBILITY

Lamp is accessible after removing cabinet back.

HORIZONTAL OSCILLATOR

Adjustment of the horizontal hold is accomplished by the proper setting of the horizontal hold control (See photo, Cabinet-Rear View.)

WIDTH

The width may be varied by adjusting the width coil. (See Placement Chart.)

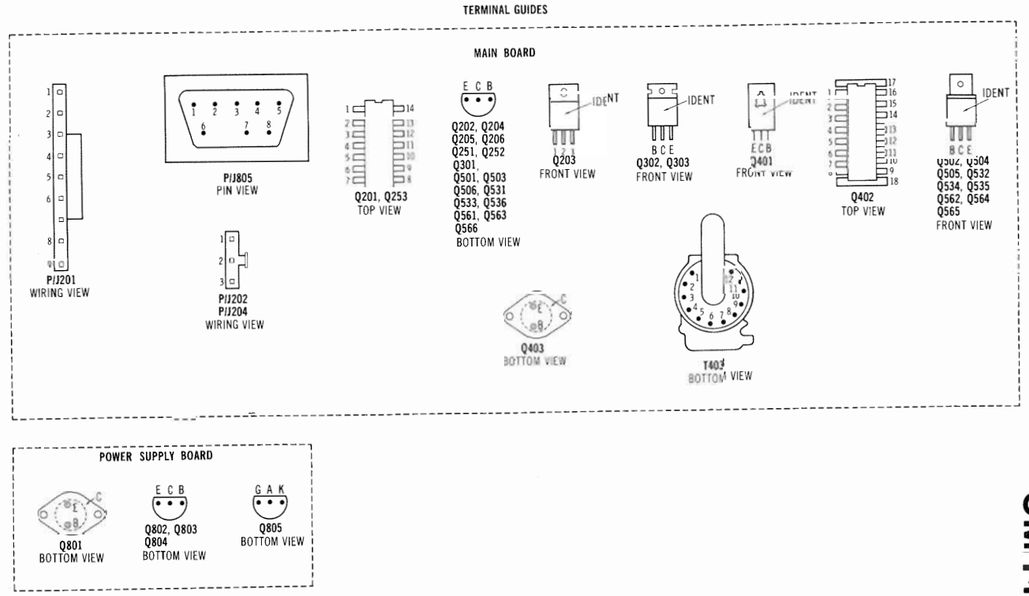
FOCUS

The focus may be varied by a focus control. (See photo, Cabinet-Rear View.)

CENTERING

Horizontal centering is accomplished by proper adjustment of the horizontal centering control. (See Placement Chart.)

Vertical centering is accomplished by proper adjustment of the vertical centering control. (See Placement Chart.)



SCHEMATIC NOTES

—✕— Circuitry not used in some versions
- - - Circuitry used in some versions
θ See parts list
⏚ Ground
▽ Common tie point
Waveforms and voltages are taken from ground, unless noted otherwise.
Waveforms: triggered scope, RGB pattern generator.
Item numbers in rectangles appear in the alignment/adjustment instructions.
Supply voltages maintained as shown at input.
Voltages measured with digital meter, with signal applied.
Controls adjusted for normal operation.
Terminal identification may not be found on unit.
Capacitors are 50 volts or less, 5% unless noted.
Electrolytic capacitors are 50 volts or less, 20% unless noted.
Resistors are ½W or less, 5% unless noted.
Value in ( ) used in some versions.
Measurements with switching as shown, unless noted.

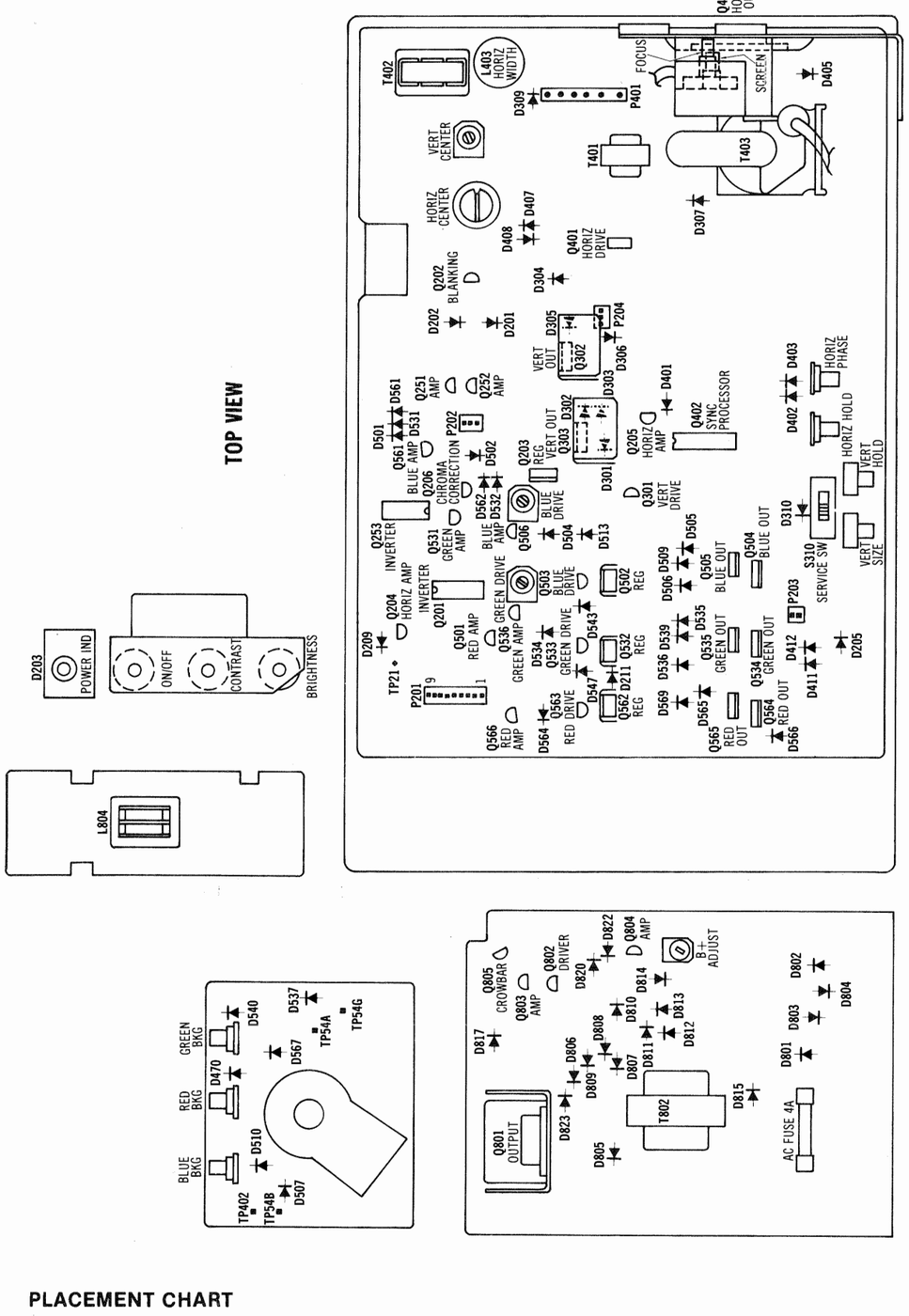
RESISTANCE MEASUREMENTS

MEASUREMENTS TAKEN WITH LOW POWER OHMS METER

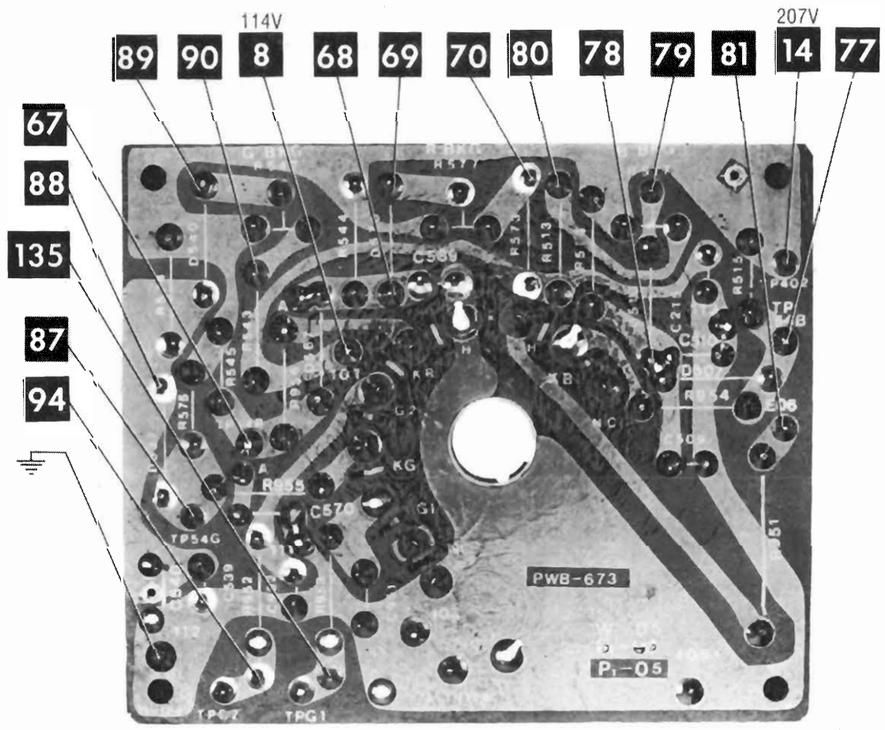
ITEM	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	PIN 13	PIN 14
Q201	325	415	323	418	418	461	0	128	418	458	415	128	415	93
Q203	135	0	93											
Q253	322	417	417	459	262	197	0	262	324	128	324	128	322	93
Q402	6470	3410	1628	8120	INF	253	48K	4990	4650	315	4760	17K	INF	84K
											PIN 15	PIN 16	PIN 17	PIN 18
											4760	3460	14K	0
V901	INF	NC	NC	1	810K	INF	INF	INF	FIL	FIL	4.5			

ITEM	E	B	C		ITEM	E	B	C		ITEM	E	B	C	
Q202	0	1.6M	10K		Q502	INF	458	INF		Q561	727	241	93	
Q204	1.6M	1091	563		Q503	1.6M	672	INF		Q562	INF	458	INF	
Q205	4760	19K	5430		Q504	9910	7970	5630		Q563	1.5M	669	INF	
Q206	0	71	1051		Q505	9910	7970	0		Q564	9980	7970	3520	
Q251	195	282	93		Q506	810	320	0		Q565	9980	7970	0	
Q252	195	197	93		Q531	727	241	93		Q566	805	302	0	
Q301	0	3890	1.5M		Q532	INF	458	INF		Q801	0(1)	356(1)	82K(1)	
Q302	2260	INF	INF		Q533	1.6M	671	INF		Q802	INF(1)	INF(1)	0(1)	
Q303	2260	1.5M	0		Q534	10K	7980	5630		Q803	0(1)	561K(1)	INF(1)	
Q401	0	265	10K		Q535	10K	7980	0		Q804	6170(1)	1987(1)	542K(1)	
Q403	3.8	7.4	5570		Q536	808	330	0		Q805	K 0(1)	G 4690(1)	A 3940(1)	
Q501	725	242	93											

(1) Taken with reference to isolated ground.



PLACEMENT CHART



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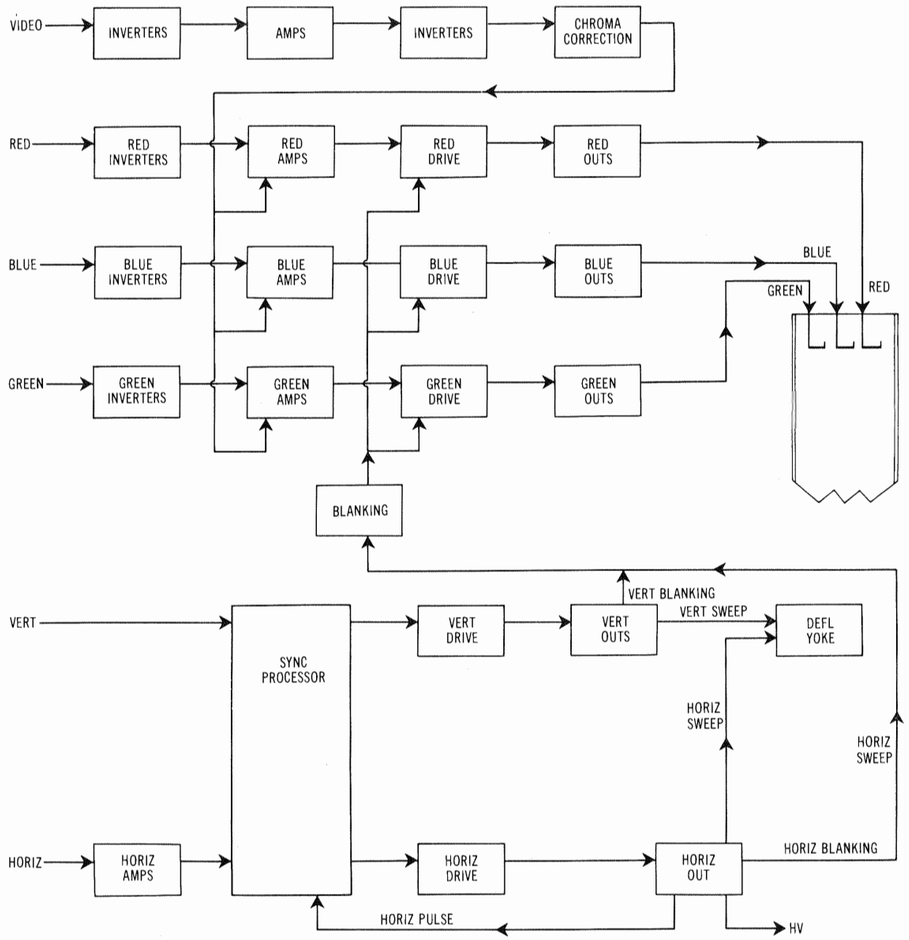
CRT SOCKET BOARD



BLOCK DIAGRAM

TROUBLESHOOTING AID

Note: Waveforms taken with triggered scope, Keyed-Rainbow generator. Schematic voltages measured with digital meter, no signal. Controls adjusted for normal operation.

PICTURE

NO PIC, NO RASTER: Check AC power supply and sources generated from Horizontal Output Transformer (T401). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, HAS RASTER: Check source voltages from Horizontal Output Transformer (T401). Refer to "Troubleshooting" Horizontal circuits.

LOW OR EXCESSIVE BRIGHTNESS: Check Video and Luminance circuits. Refer to "Troubleshooting" Video circuit.

SWEEP

NO RASTER: Check HV rectifier, Part of Horizontal Output Transformer (T401).
Refer to "Troubleshooting" Horizontal circuit.

NO VERT DEFLECTION: Refer to "Troubleshooting" Vertical circuit.

POOR VERT LIN OR FOLDOVER: Refer to "Troubleshooting" Vertical circuit.

POOR HORIZ LIN OR FOLDOVER: Refer to "Troubleshooting" Horizontal circuit.

NARROW PICTURE: Refer to "Troubleshooting" Horizontal circuit.

VERT OFF FREQUENCY: Refer to "Troubleshooting" Vertical circuit.

HORIZ OFF FREQUENCY: Refer to "Troubleshooting" Horizontal circuit.

SYNC

NO VERT/HORIZ SYNC: Refer to "Troubleshooting" Sync circuit.

RASTER

YELLOW (NO BLUE): Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

CYAN (NO RED): Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

MAGENTA (NO GREEN): Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

TROUBLESHOOTING

POWER SUPPLY

Check the AC Line Fuse (F801). If bad, check for possible short at Bridge Rectifier Diodes (D801 thru D804), DC to DC Converter Transformer (T802), Output Transistor (Q801) and SCR Q805. Replace defective components and apply 120 VAC power.

Check for 153V (with respect to isolated ground) at the cathode of Diode D801 and at the collector of Transistor Q801. Check voltages and waveforms (with respect to isolated ground) at pin 12 of Transformer T802, base of Transistor Q801 and the anode of SCR Q805. Check for 115V at the cathode of Diode D815. If the 115V is missing, check Transformer T802, Transistor Q801, SCR Q805 and associated components. Check sources that are developed from the Horizontal Output Transformer (T401), refer to the "Power Supply" section of this Troubleshooting guide.

VERTICAL

No vertical deflection. Inject a vertical signal at pin 2 of the Sync Processor IC (Q402). If vertical deflection returns, check voltages, waveforms and components associated with pins 2, 3, 4, 6, 7 and 8 of IC Q402 and associated circuitry. If the vertical deflection does not return, check voltages, waveforms and components associated with Vertical Driver Transistor (Q301), Vertical Output Transistor (Q302 and Q303), Electrolytic C315 and the vertical winding on the deflection yoke.

Vertical linearity or foldover problems can be caused by vertical feedback and bias circuits. Check the condition of Diodes D301 thru D306, Electrolytic C315, Side Pincushion Transformer (T402) and associated circuitry.

SYNC

No vertical sync. Check for vertical pulses at pin 9 of P2, check voltages, waveforms and components associated with pins 2 thru 8 of the Sync Processor IC (Q402).

No horizontal sync. Check for horizontal pulses at pin 8 of P2, check voltages, waveforms and components associated with the Horizontal Amp Transistors (Q204 and Q205) and pins 13 thru 16 of IC Q402.

RASTER

Check the CRT and CRT voltages and waveforms.

Raster is magenta (No green). Check voltages, waveforms and components associated with Transistors Q535, Q534, Q532, Q533 and pin 4 of the CRT socket.

Raster is yellow (No blue). Check voltages, waveforms and components associated with Transistors Q505, Q504, Q502, Q503 and pin 9 of the CRT socket.

Raster is cyan (No red). Check voltages, waveforms and components associated with Transistors Q565, Q564, Q562, Q563 and pin 6 of the CRT socket.

Raster has a keystone shape. Check the deflection yoke.

Raster has a pincushion shape. Check the Side Pincushion Transformer (T402) and associated circuitry.

Raster has height or width problems. Refer to the "Vertical", "Horizontal" and "Power Supply" sections of this Troubleshooting guide.

HORIZONTAL

Check for 115V at the collector of the Horizontal Output Transistor (Q403). If 115V is missing, check for 115V at TP91, at both ends of Coil L404 and at pins 7 and 8 of the Horizontal Output Transformer (T401). If the 115V is missing at TP91, refer to the "Power Supply".

Inject a horizontal signal at the base of Transistor Q403. If the high voltage returns, check voltages, waveforms and components associated with pins 9 thru 12 of the Sync Processor IC (Q402), Horizontal Driver Transistor (Q401) and associated components. If the high voltage does not return, check voltages, waveforms and components associated with Transistor Q403 and Transformer T401.
The high voltage rectifier is a part of Transformer T401 assembly and may be bad. Check for possible shorts at the B+ sources that are developed from Transformer T401 that could be loading down the horizontal circuits. Check for 207V at the cathode of Diode D405, 43.2V at the cathode of Diode D307 and 13.61V at the cathode of Diode D404.

Poor horizontal linearity or foldover problems may be caused by the condition of Capacitors C422 and C415, Side Pincushion Transformer (T402) and associated circuitry.

VIDEO

No characters appear on the screen of the CRT. Check for 5.01V at pin 14 of the Inverter ICs (Q201 and Q253) and check the Regulator IC (Q203).

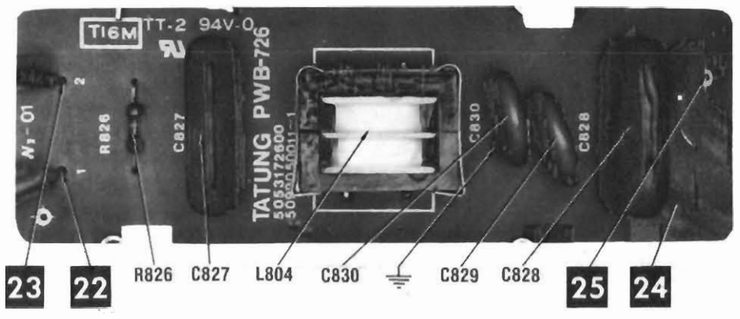
Inject a video signal at the base of the Blue Amp Transistor (Q506) and check for blue picture on the CRT. If there is no video on the CRT, check voltages, waveforms and components associated with Transistors Q506, Q502, Q503, Q504 and Q505.

Inject a video signal at the base of the Green Amp Transistor (Q536) and check for green picture on the CRT. If there is no video on the CRT, check voltages, waveforms and components associated with Transistors Q536, Q532, Q533, Q534 and Q535.

Inject a video signal at the base of the Red Amp Transistor (Q566) and check for red picture on the CRT. If there is no video on the CRT, check voltages, waveforms and components associated with Transistors Q566, Q562, Q563, Q564 and Q565.

If video appears on the screen of the CRT, check voltages, waveforms and components associated with Transistors Q206, Q251, Q252 and ICs Q201 and Q253. Check the CRT and CRT voltages and waveforms.

Video has retrace lines, check voltages and components associated with the Blanking Transistor (Q202).



AC INPUT BOARD

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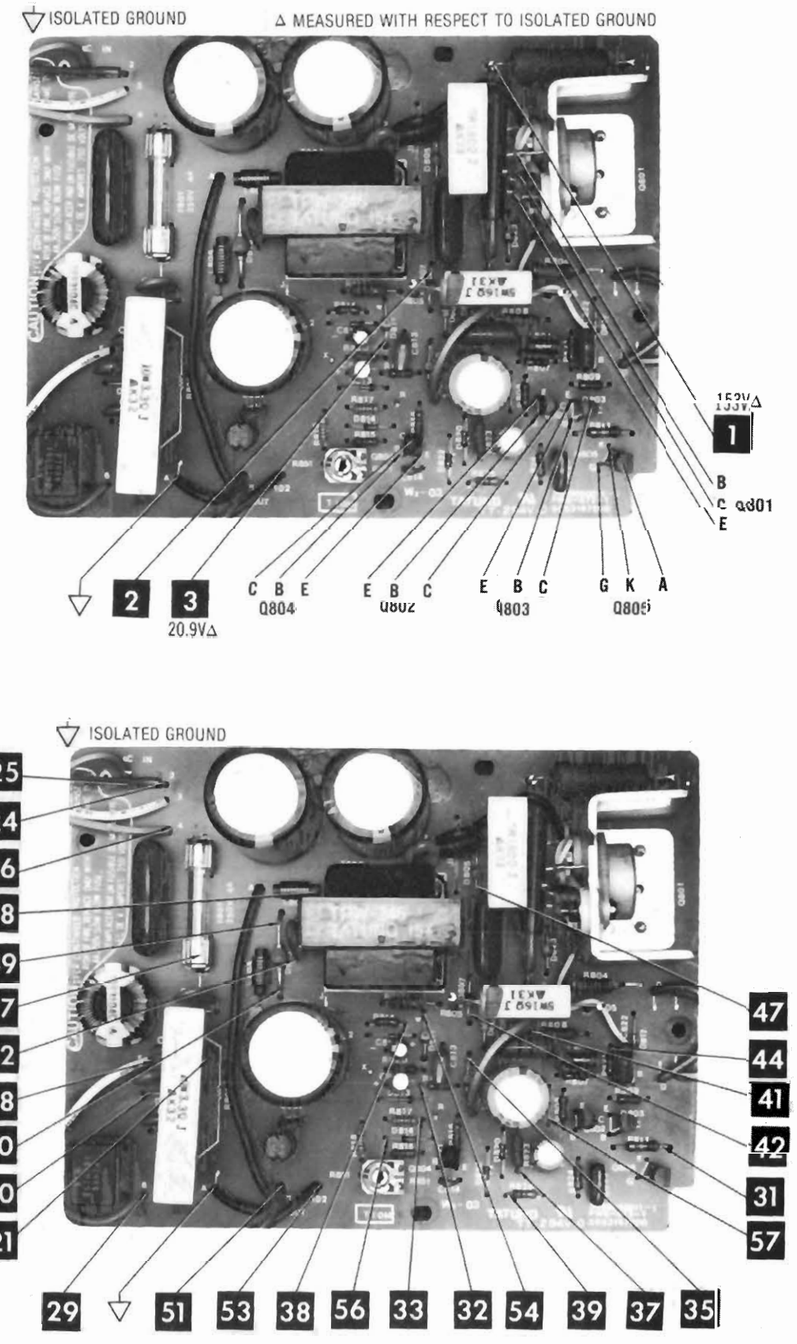

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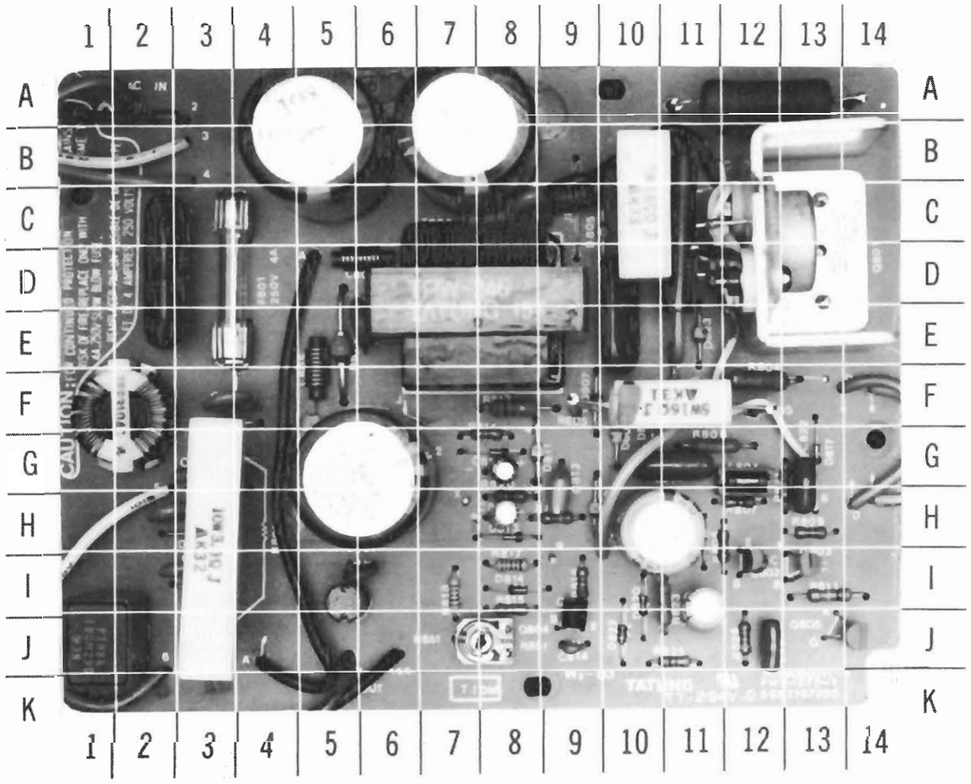
POWER SUPPLY BOARD

POWER SUPPLY BOARD GridTrace LOCATION GUIDE

C802	C-8	C831	I-5	F801	D-4	R809	H-13
C803	F-3	D801	F-3	L801	G-12	R810	B-12
C804	F-3	D802	I-3	L802	D-6	R811	I-13
C805	G-3	D803	G-3	L803	I-5	R812	F-8
C806	H-3	D804	H-3	L805	E-5	R813	H-9
C807	B-7	D805	C-10	L806	C-11	R814	G-8
C808	B-5	D806	F-11	Q801	C-13	R815	I-8
C809	E-10	D807	F-9	Q802	I-12	R816	I-9
C811	G-11	D808	G-10	Q803	I-13	R817	I-8
C812	H-8	D809	F-10	Q804	J-9	R818	J-7
C813	G-9	D810	H-9	Q805	J-14	R820	H-8
C814	J-9	D811	G-9	R	I-9	R821	G-13
C815	G-8	D812	G-8	R801	H-3	R823	I-11
C817	E-6	D813	H-8	R802	C-10	R824	J-12
C818	G-5	D814	I-8	R803	A-12	R825	J-11
C821	H-10	D815	E-5	R804	F-12	R851	J-7
C822	G-13	D817	G-13	R805	F-11	R890	J-1
C824	D-2	D820	I-10	R806	H-11	T801	F-2
C825	J-12	D822	J-10	R807	H-12	T802	D-7
C826	I-11	D823	E-11	R808	G-11	X	H-7



POWER SUPPLY BOARD A Howard W. Sams | GRIDTRACE™ Photo

MISCELLANEOUS ADJUSTMENTS

B+ ADJUSTMENT

Connect a DC meter to TP91, low side to ground. Apply power to Monitor. Adjust B+ Adjust Control (R851) for +115V.

HORIZONTAL HOLD ADJUSTMENT

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Connect a .1μF Capacitor from TP22 to ground. Adjust Horizontal Hold Control (R409) until the bars stop (in sync) or slowly float across the screen. Remove the .1μF Capacitor.

HORIZONTAL AND VERTICAL CENTERING

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Adjust Horizontal Center Control (R434) for best horizontal centering of the raster. Adjust Vertical Center Control (R336) for best vertical centering of the raster.

HORIZONTAL PHASE CONTROL

Adjust Horizontal Phase Control (R413) to place the cursor at the left edge of the raster.

PURITY ADJUSTMENT

Degauss the CRT, if necessary. Set the Blue (R517) and Green (R547) Background Controls to MINIMUM. Advance the Red Background Control (R577) to produce a red raster. Loosen the deflection yoke and slide it back against the Purity/Convergence Assembly. Adjust the Purity Magnets to produce a vertical red stripe at the center of the screen. Slide the deflection yoke forward to produce uniform red raster. Check for pure blue and green screens by advancing the Blue (R517) and Green (R547) Background Controls one at a time.

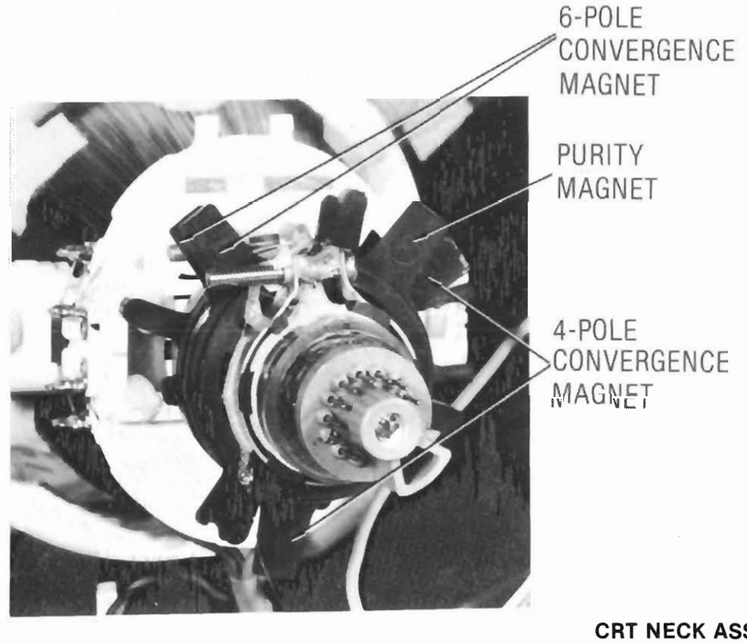
COLOR TEMPERATURE ADJUSTMENT

Set the Blue (R506) and Green (R536) Drive Controls to midrange. Set the Red (R577), Blue (R517) and Green (R547) Background Controls to MINIMUM. Set Service Switch (S301) to Service position. From MINIMUM position adjust Screen Control (R999B) to obtain a dim line of a predominate color. Adjust the two background controls of the least predominate colors to obtain a dim white line. Set Service Switch to Normal. Adjust the Blue (R506) and Green (R536) Drive Controls for a black and white picture

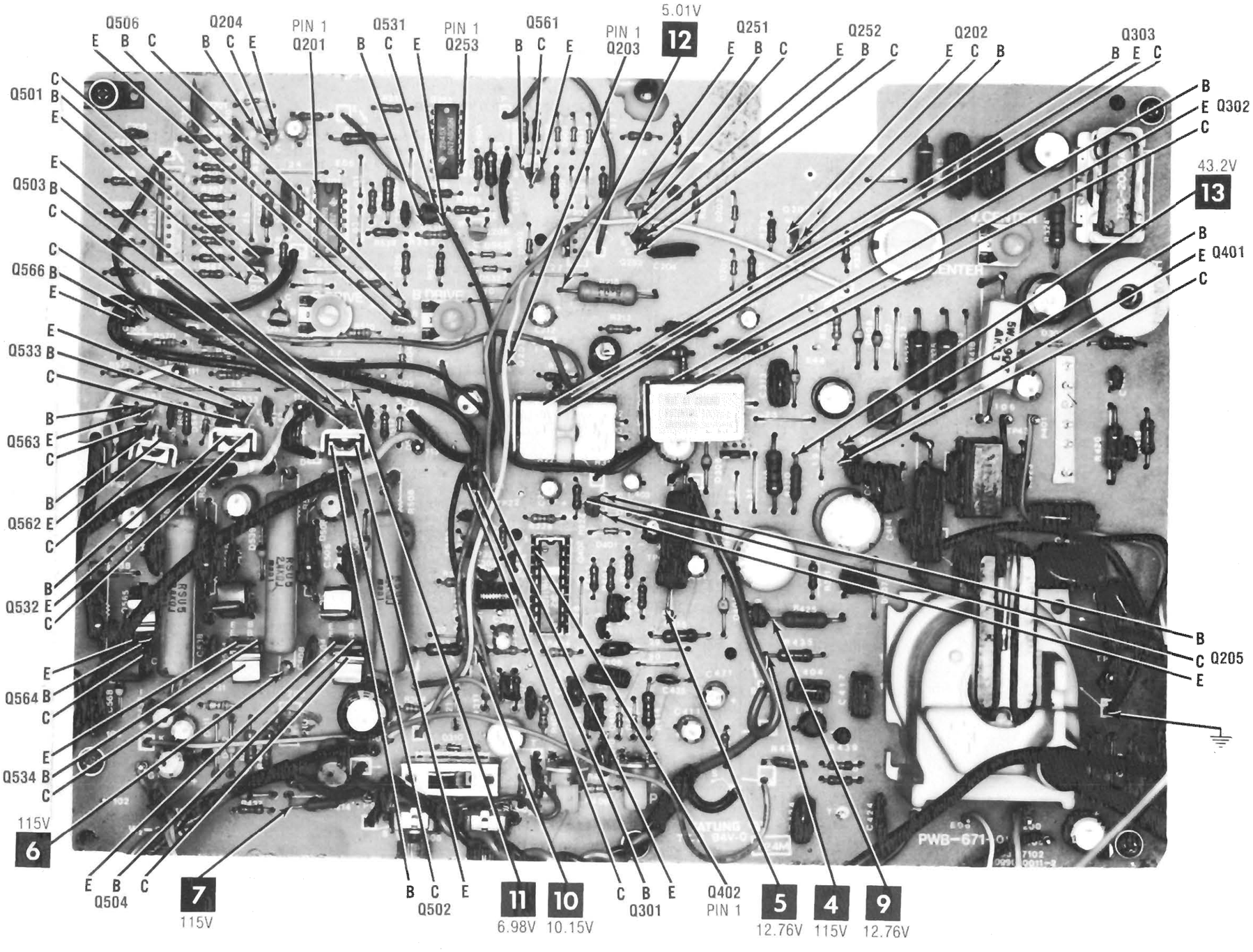
CONVERGENCE ADJUSTMENTS

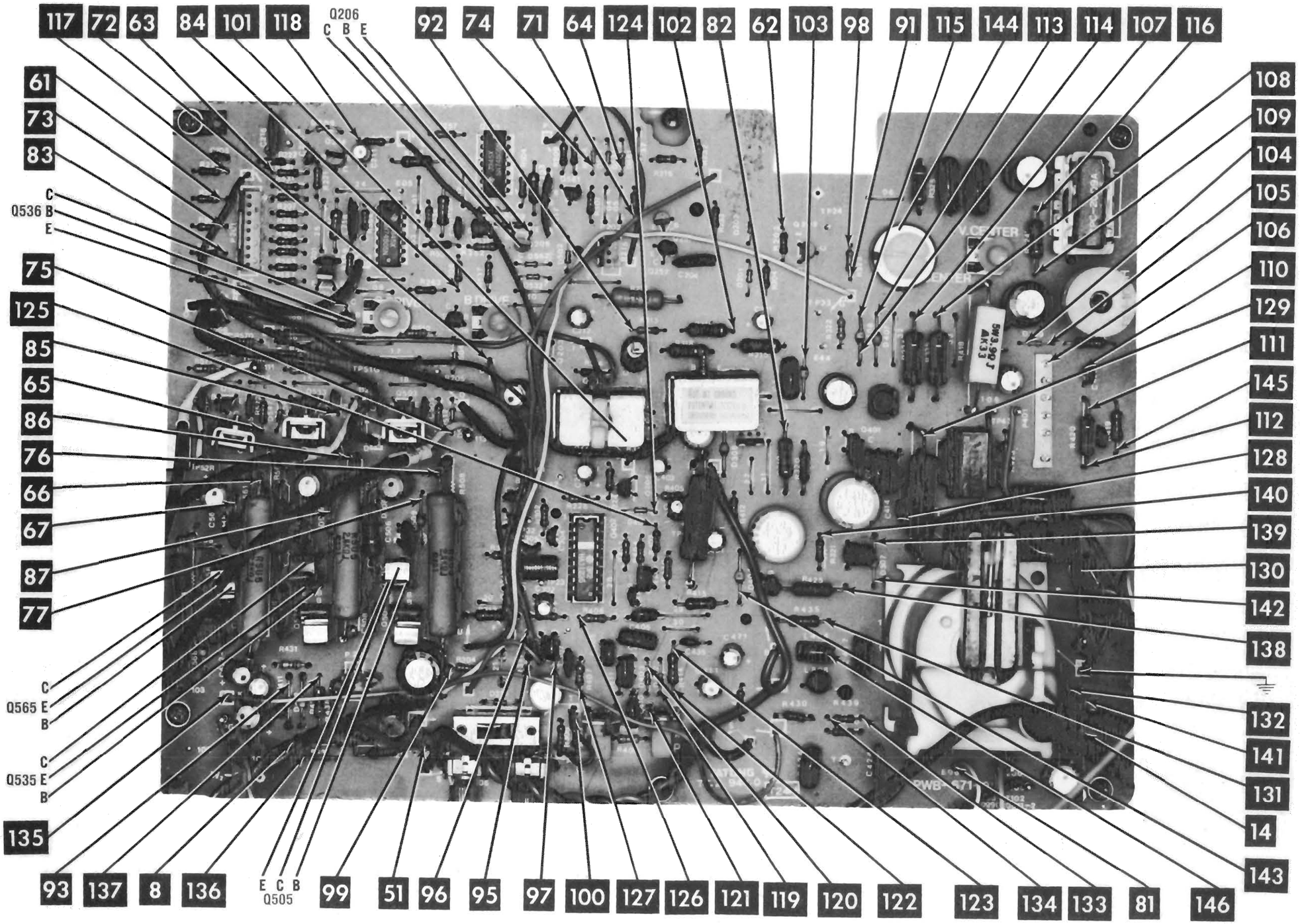
Connect a RGB video pattern generator to the antenna terminals and tune in a dot pattern. Adjust Four-pole Convergence Magnets to converge the red and blue dots at the center of the screen. Adjust Six-pole Convergence Magnets to converge the red/blue dots over the green dots at the center of the screen.

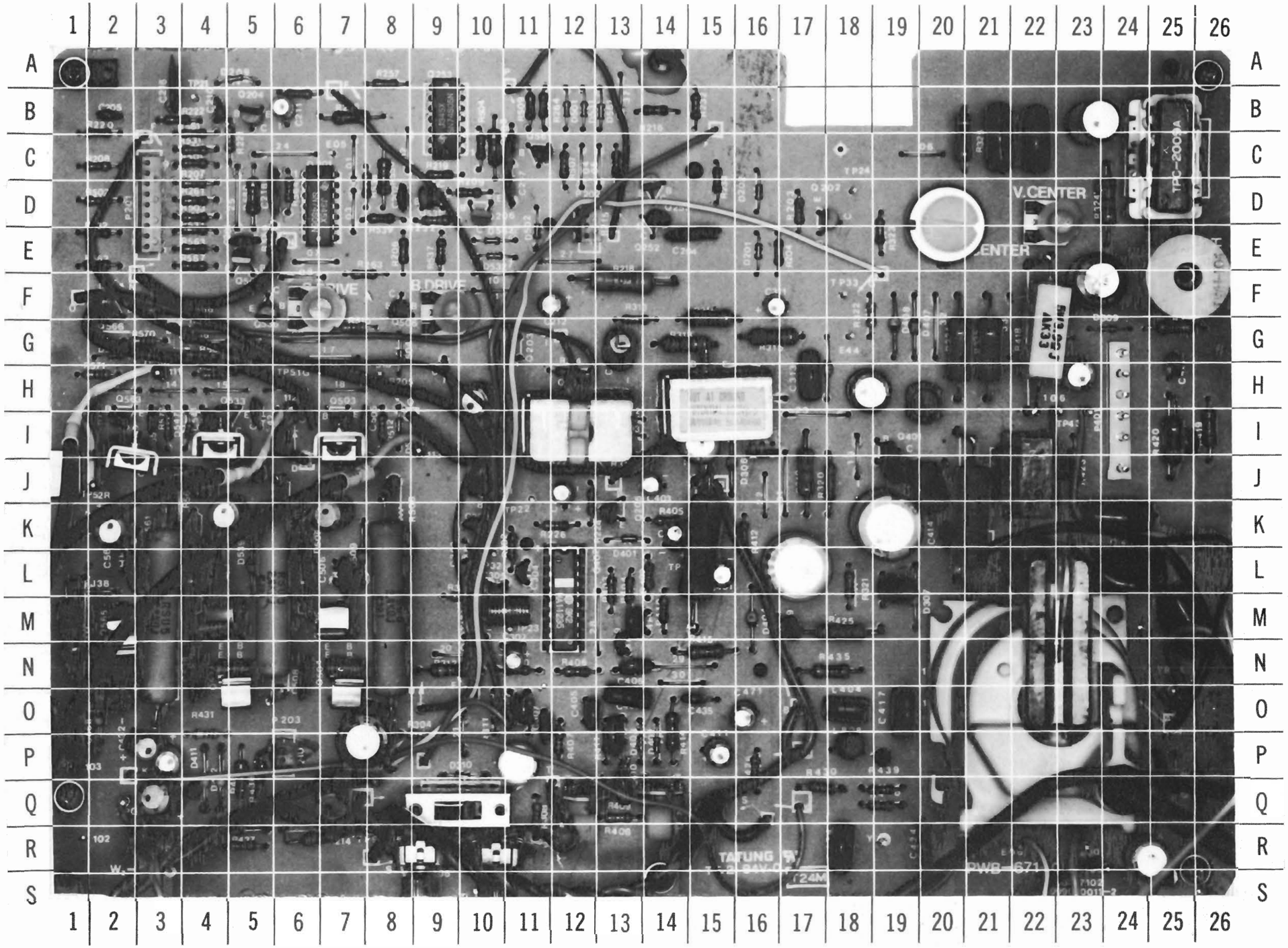
Tune in a crosshatch pattern. Remove the rubber wedges between the deflection yoke and CRT. Tilt the deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the right and left sides of the screen. Tilt the deflection yoke to the right or left to converge the horizontal lines at the top and bottom of the screen and the vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain the best overall convergence. Replace the rubber wedges.



CRT NECK ASSEMBLY



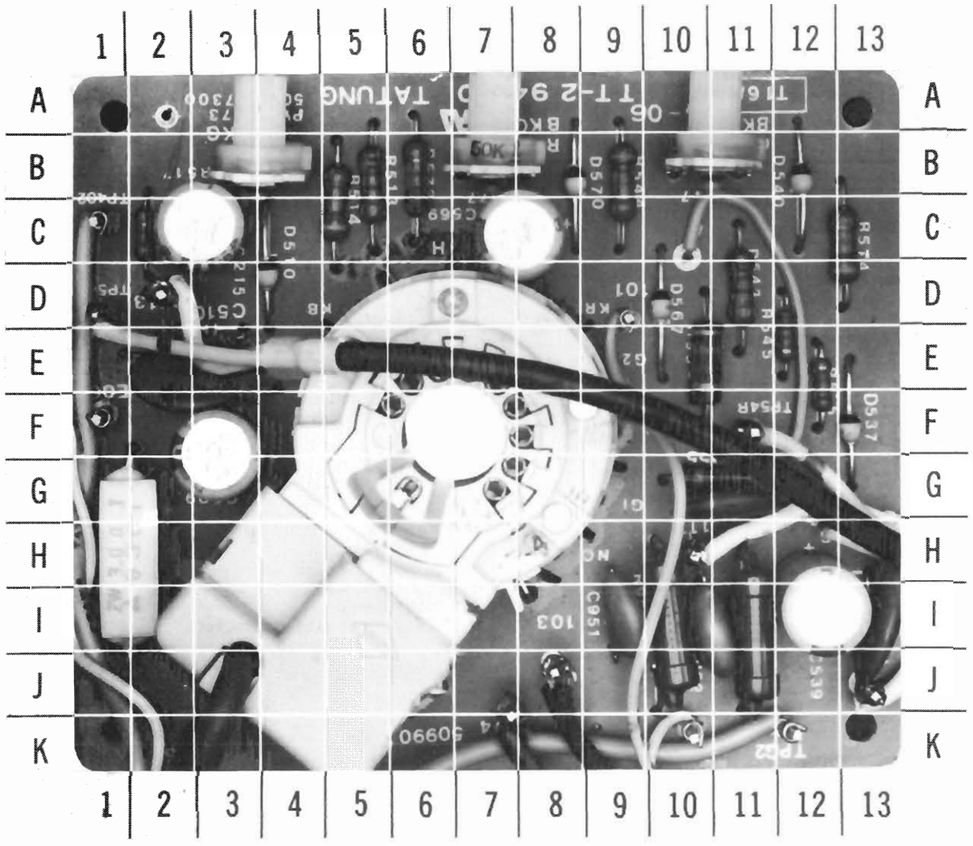




A Howard W. Sams GRIDTRACE™ Photo

CRT SOCKET BOARD GridTrace LOCATION GUIDE

C215	C-3	D510	D-4	R543	D-11	R952	I-11
C509	G-3	D537	F-13	R544	B-9	R953	I-10
C510	E-2	D540	B-12	R545	E-12	R954	E-2
C539	I-12	D567	D-10	R547	B-11	R955	G-11
C540	I-13	D570	B-8	R573	B-6	R956	E-10
C569	C-7	R513	B-5	R574	C-13	TP54B	D-2
C570	G-11	R514	C-5	R575	E-12	TP54G	H-12
C951	I-9	R515	C-2	R577	B-7	TP54R	F-11
C952	I-11	R517	B-4	R951	H-1	TP402	C-1
D507	D-3						



CRT SOCKET BOARD A Howard W. Sams GRIDTRACE™ Photo

MAIN BOARD GridTrace LOCATION GUIDE

C201	E-5	C537	K-4	Q253	B-9	R324	D-24	R568	M-3
C202	D-8	C538	N-4	Q301	J-10	R325	C-21	R569	E-5
C203	C-11	C541	I-4	Q302	H-15	R331	G-22	R570	G-3
C204	E-14	C565	I-3	Q303	H-12	R332	G-25	R571	H-2
C205	B-2	C566	L-2	Q401	I-19	R334	G-20	R572	I-3
C206	H-10	C567	K-2	Q402	L-12	R335	G-2	R579	M-1
C208	P-7	C568	O-1	Q501	E-5	R336	D-22	R580	D-5
C209	Q-26	C571	I-2	Q502	I-7	R401	K-15	R581	N-3
C210	B-4	D201	E-16	Q503	I-7	R402	L-14	R582	G-4
C211	B-6	D202	D-16	Q504	N-7	R403	L-13	S301	Q-9
C212	F-12	D205	R-5	Q505	M-7	R404	L-13	T401	J-22
C213	J-12	D209	A-5	Q506	F-8	R405	K-14	T402	C-25
C216	A-3	D211	J-3	Q531	D-9	R406	N-12	T403	O-22
C217	D-11	D301	I-12	Q532	I-4	R407	P-12	TP21	B-4
C218	D-5	D302	I-13	Q533	I-4	R408	Q-13	TP22	J-11
C301	O-11	D303	I-13	Q534	N-5	R409	Q-12	TP43	I-3
C302	N-11	D304	H-17	Q535	M-4	R410	M-14	TP44	O-25
C303	L-10	D305	H-16	Q536	F-5	R411	P-13	TP52B	J-7
C304	L-11	D306	J-15	Q561	C-11	R412	K-16	TP52G	J-4
C305	L-10	D307	M-19	Q562	I-2	R413	Q-14	TP52R	J-2
C306	N-10	D309	G-24	Q563	I-2	R414	P-14	TP91	R-8
C307	O-11	D310	P-10	Q564	N-2	R415	N-15	TPG1	Q-2
C308	P-11	D401	K-13	Q565	M-2	R416	K-21		
C309	K-10	D402	P-14	Q566	F-2	R417	J-21		
C310	H-18	D403	P-13	R203	D-17	R418	G-22		
C311	F-16	D404	M-16	R204	E-17	R419	I-26		
C313	H-17	D405	Q-25	R205	H-8	R420	I-25		
C314	I-15	D407	G-19	R206	E-8	R421	P-25		
C315	F-24	D408	G-19	R207	D-4	R423	J-23		
C316	B-23	D411	Q-4	R208	C-2	R425	M-18		
C318	H-23	D412	Q-4	R209	D-10	R426	P-16		
C319	F-23	D501	B-12	R213	Q-6	R430	Q-17		
C321	G-13	D502	E-11	R214	R-7	R431	O-4		
C401	L-15	D504	G-8	R216	B-14	R434	D-20		
C402	K-14	D505	L-8	R218	F-13	R435	N-18		
C403	J-14	D506	L-6	R219	C-9	R436	Q-5		
C404	M-13	D509	L-7	R220	B-2	R437	R-5		
C405	O-12	D513	I-8	R221	C-5	R438	Q-5		
C406	N-13	D531	B-12	R222	B-3	R439	Q-19		
C407	O-13	D532	E-10	R223	B-6	R440	Q-19		
C408	P-13	D534	G-5	R224	J-12	R501	C-4		
C409	N-13	D535	L-5	R225	J-12	R502	D-2		
C410	Q-13	D536	L-4	R226	K-12	R503	D-4		
C411	P-15	D539	L-5	R231	C-13	R504	C-10		
C412	J-20	D543	I-6	R232	B-15	R506	F-9		
C413	J-19	D547	I-4	R233	D-15	R507	C-12		
C414	K-20	D561	B-13	R252	D-9	R508	M-8		
C417	O-19	D562	E-10	R257	A-8	R509	B-11		
C418	L-24	D564	G-2	R258	B-7	R510	G-7		
C419	M-25	D565	L-3	R261	D-4	R511	H-7		
C420	K-24	D566	O-2	R263	E-7	R512	I-8		
C421	I-25	D569	L-3	R264	B-11	R519	L-6		
C422	H-25	L301	M-11	R302	K-11	R520	C-10		
C423	R-25	L302	L-19	R303	Q-12	R521	N-8		
C424	R-20	L401	H-20	R304	O-9	R531	C-4		
C425	C-22	L403	F-25	R305	M-10	R532	E-2		
C426	C-21	L404	O-18	R306	R-9	R533	E-4		
C428	L-17	L501	K-8	R307	O-11	R534	D-8		
C429	M-17	L531	L-6	R308	Q-11	R536	F-7		
C430	Q-7	L561	K-3	R309	R-10	R537	E-9		
C431	P-3	L808	P-18	R310	N-11	R538	L-5		
C432	P-3	P/J201	D-3	R311	O-10	R539	D-8		
C433	K-19	P/J202	D-12	R312	N-9	R540	G-4		
C434	R-18	P/J203	P-6	R313	F-13	R541	H-4		
C435	O-15	P/J204	I-16	R314	H-12	R542	I-6		
C436	Q-3	P/J401	I-24	R315	G-16	R549	L-4		
C471	O-16	Q201	D-6	R316	F-15	R550	C-8		
C505	I-7	Q202	D-18	R317	I-13	R551	M-5		
C506	L-7	Q203	G-11	R318	G-14	R561	B-4		
C507	K-7	Q204	B-5	R319	J-17	R562	E-2		
C508	N-6	Q205	K-12	R320	J-18	R563	E-4		
C511	I-6	Q206	D-10	R321	L-18	R564	D-6		
C535	I-5	Q251	D-14	R322	F-18	R566	F-3		
C536	L-4	Q252	D-14	R323	E-19	R567	E-4		

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA				
			GENERAL ELECTRIC PART No.	MOTOROLA PART No.	NEW-TONE NTE PART No.	PHILIPS ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
D201,2	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D205	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D209	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D211	HZ-7B1		GEZD-6.8	1N5235B	NTE5014A	ECG5014A	SK6A8/5014A	WEP1415/5014	103-29009
	HZ-7B		GEZD-6.8	1N5235B	NTE5014A	ECG5014A	SK6A8/5014A	WEP1415/5014	103-29009
D301 thru	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D303									
D304,5	V09C		GE-511		NTE552	ECG552	SK5002	WEP172/506	103-287
D306	V06E		GE-504A	1N4005	NTE116	ECG116	SK3017B	WEP158/116	212-76-02
D307	V09G		GE-511		NTE552	ECG552	SK9000/552	WEP172/506	103-287
D309	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D310	HZ11A		GEZD-11	1N5241B	NTE5020A	ECG5020A	SK11A/5020A	WEP1421/5020	103-279-20
D401 thru	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D403									
D404	V09E		GE-511		NTE552	ECG552	SK9000/552	WEP172/506	103-287
D405	V09C		GE-511		NTE552	ECG552	SK5002	WEP172/506	103-287
D407,8	V09C		GE-511		NTE552	ECG552	SK5002	WEP172/506	103-287
D411,12	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D501,2	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D504,5	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D506	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D507	V09C		GE-511		NTE552	ECG552	SK5002	WEP172/506	103-287
D509,10	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D513	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D531,32	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D534,35	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D536	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D537	V09C		GE-511		NTE552	ECG552	SK5002	WEP172/506	103-287
D539,40	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D543	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D547	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D561,62	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D564,65	1S2076		GE-514	1N4935	NTE519	ECG519	SK3100/519	WEP925/519	103-131
D566	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D567	V09C		GE-511		NTE552	ECG552	SK5002	WEP172/506	103-287

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

FUSE DEVICES

ITEM NO.	DESCRIPTION	MFGR. PART NO.		NOTES
		DEVICE	HOLDER	
F801	4A @ 250V Slow-Blow			

TRANSFORMER (DC-DC Converter)

ITEM No.	RATING			REPLACEMENT DATA		
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	NOTES
T802	400V p-p @ 412mA DC	200V p-p @ 479mA DC	40V p-p @ 8.89mA DC	TPW-246 (1)		
	SEC. 3	SEC. 4	SEC. 5			
	14V p-p @ 64mA DC					

(1) Number on unit.

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
D203	LED	8654275 (1)	Power, FLV310, Grn (2.07V @ 10.78mA)
DG1	Degaussing Coil	8654275 (1)	
L806	Ferrite Bead		
P800	Power Cord	8529158	AC
S1	Switch		Power
S301	Switch		Normal/Service
V901	CRT	8529290 (1)(2)	370RKB2-TC14
	P.C. Board		Main Board
	P.C. Board		Power Supply Board
	P.C. Board		CRT Socket Board
	P.C. Board		AC Input Board
	Signal Cable	8529334 (1)	Includes Cable and Connectors

(1) Restricted Availability.
(2) Includes CRT and Yoke.

CABINET & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.
Front Cover (Includes Top, Bottom and Power Supply Brackets).	8529285 (1)
Rear Cover	8529286 (1)

(1) Restricted Availability.

ITEM	PART No.
Plug, Cover Screw	
Knob, Brightness	8529287
Knob, Contrast	8529288
Knob, Power On/Off	8529289

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NEW-TONE PART No.	WORKMAN PART No.
R213	2.2 1/2W Fusible			
R214	2.2 1/2W Fusible			
R320	10 1/2W Fusible			
R401	6800 5% 3W Metal Oxide			
R416	4700 5% 3W Metal Oxide			
R418	3.9 5% 5W WW		5W3D9	
R421	2.2 1/2W Fusible			
R425	2.2 1/2W Fusible			
R430	10K 2% 1/4W Carbon Film		QW310	22-2253
R508	2400 5% 5W WW			
R521	56 1/2W Fusible			
	10 1/2W Fusible			
R538	2400 5% 5W WW			
R551	56 1/2W Fusible			
	10 1/2W Fusible			
R568	2400 5% 5W WW			
R581	56 1/2W Fusible			
	10 1/2W Fusible			
R801	3.3 5% 10W WW		10W3D3	
R802	180 5% 5W WW		5W118	
R803	56K 5% 3W Metal Oxide			
R805	16 5% 5W WW			
R808	2.2 1/2W Fusible			
R817	1200 1% 1/4W Carbon Film			
R818	2000 1% 1/4W Carbon Film			
R823	10 1/2W Fusible			
R890	PTC 3.7 Cold			FR605

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.
L301	RF Choke (5uH)	
L302	RF Choke	
L401	RF Choke (3.3mH)	
L404	RF Choke (18uH)	
L501	RF Choke (10uH)	
L531	RF Choke (10uH)	
L561	RF Choke (10uH)	

ITEM No.	FUNCTION	MFGR. PART No.
L801	RF Choke	
L802	RF Choke	
L803	RF Choke	
L804	AC Line Choke	
L805	RF Choke	
L808	RF Choke	
T801	AC Line Choke	

COILS & TRANSFORMERS (Sweep Circuits)

ITEM No.	FUNCTION	REPLACEMENT DATA		
		MFGR. PART No.	OTHER IDENTIFICATION	THORDARSON PART No.
DY	Yoke 90° Horiz 2.02mH	8529290 (2)(3)	89235100 (1)	
	Vert 134mH			
L403	Width		TWH104 (1)	
T401	Horiz Driver		TLN114 (1)	
T402	Side Pincushion		TPC2009A (1)	
T403	Horiz Output		TFB150A (1)	

(1) Number on unit.
(2) Includes CRT and Yoke.
(3) Restricted Availability.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA					
			GENERAL ELECTRIC PART No.	MOTOROLA PART No.	NEW-TONE NTE PART No.	PHILIPS ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
D569,70	V06C		GE-504A	1N4003	NTE116	ECG116	SK3311	WEP156	212-76-02
D801									
D802									
D803									
D804									
D805					NTE552	ECG552	SK9000/552	WEP172/506	103-287
D806					NTE552	ECG552	SK9000/552	WEP172/506	103-287
D807			GE-511		NTE552	ECG552	SK9000/552	WEP172/506	103-287
D808			GE-511						
D809			GE-511						
D810					NTE552	ECG552	SK9000/552	WEP172/506	103-287
D811					NTE552	ECG552	SK9000/552	WEP172/506	103-287
D812									
D813									
D814									
D815									
D817									
D820									
D822									
D823			GE-511		NTE552	ECG552	SK9000/552	WEP172/506	103-287
Q201	SN74S05N				NTE74S05	ECG74S05			
	HD74S05				NTE74S05	ECG74S05			
Q202	2SC458C				NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q203	HA17805,P		GE-210	2N4401*	NTE960	ECG960	SK3591/960	WEP910/289	221-Z9043
Q204	2SC458C		GEVR-102	MC7805CT	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
			GE-210	2N4401*					
Q205	2SA844D,E		GE-65	2N5679*	NTE234	ECG234	SK3247/234	WEP907/234	121-Z9005
Q206	2SC458C		GE-210	2N4401*	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q251,52	2SC458C		GE-210	2N4401*	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q253	SN74S05N				NTE74S05	ECG74S05			
	HD74S05				NTE74S05	ECG74S05	SK9352/399	WEP750	121-Z9045*
Q301	2SC1921		GE-222*	MPSU10*	NTE399	ECG399	SK9118/375	WEP763/375	121-Z9106
Q302	2SD1138C		GE-375		NTE54	ECG54	SK9363/398		121-Z9115
Q303	2SB861C				NTE398	ECG398	SK3747/157		
Q401	2SC2611BK		GE-232	MJE340	NTE157	ECG157	SK9249/1550	WEP61/157	121-Z9016
Q402	HA11235				NTE1550	ECG1550			

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MOTOROLA PART No.	NEW-TONE NTE PART No.	PHILIPS ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
Q403	2SD898B			BU208	NTE89	ECG89	SK9119/89	WEP89/89	121-Z9112
Q501	2SC458C		GE-210	2N4401*	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q502	2SC1514		GE-251	TIP50	NTE376	ECG376	SK9362/376	WEP779/198	121-Z9028
Q503	2SC1906		GE-86	MPS6543*	NTE107	ECG107	SK3293/107	WEP923/316*	121-522*
Q504	2SD757C,D								
Q505	2SB717C,D								
Q506	2SA844D,E		GE-65	2N5679*	NTE234	ECG234	SK3247/234	WEP907/234	121-Z9005
Q531	2SC458C		GE-210	2N4401*	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q532	2SC1514		GE-251	TIP50	NTE376	ECG376	SK9362/376	WEP779/198	121-Z9028
Q533	2SC1906		GE-86	MPS6543*	NTE107	ECG107	SK3293/107	WEP923/316*	121-522*
Q534	2SD757C,D								
Q535	2SB717C,D								
Q536	2SA844D,E		GE-65	2N5679*	NTE234	ECG234	SK3247/234	WEP907/234	121-Z9005
Q561	2SC458C		GE-210	2N4401*	NTE85	ECG85	SK3124A/289A	WEP910/289	121-972*
Q562	2SC1514		GE-251	TIP50	NTE376	ECG376	SK9362/376	WEP779/198	121-Z9028
Q563	2SC1906		GE-86	MPS6543*	NTE107	ECG107	SK3293/107	WEP923/316*	121-522*
Q564	2SD757C,D								
Q565	2SB717C,D								
Q566	2SA844E		GE-65	2N5679*	NTE234	ECG234	SK3247/234	WEP907/234	121-Z9005
Q801	2SD1185						SK3111		
Q802	2SB739C		GE-48	2N2906A	NTE294	ECG294	SK3841/294	WEP916/294	121-Z9067
Q803	2SC1213C		GE-268	2N4401*	NTE289A	ECG289A	SK3122	WEP910/289	121-Z9065
Q804	2SA1029C		GE-269	2N4403	NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003
Q805	CW12B								

* Lead configuration may vary from original.

WIRING DATA

High Voltage Lead	Use BELDEN No.	9867 (30 KV) or 8866 (40 KV)
Shielded Hook-up Wire	Use BELDEN No.	8401 or 8421 (Single-Conductor)
		8208 (Two-Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8529 (Solid) Available in 13 Colors
		8522 (Stranded) Available in 13 Colors

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

ELECTROLYTIC CAPACITORS

Item numbers not listed are normally available at local distributors.

ITEM No.	RATING	MFGR. PART No.
C306	2.2 25V 10%	

ITEM No.	RATING	MFGR. PART No.

CAPACITORS

Item numbers not listed are normally available at local distributors.

ITEM No.	RATING	MFGR. PART No.
C824 C827 C828	.1 125VAC 10% .1 125VAC .1 125VAC	

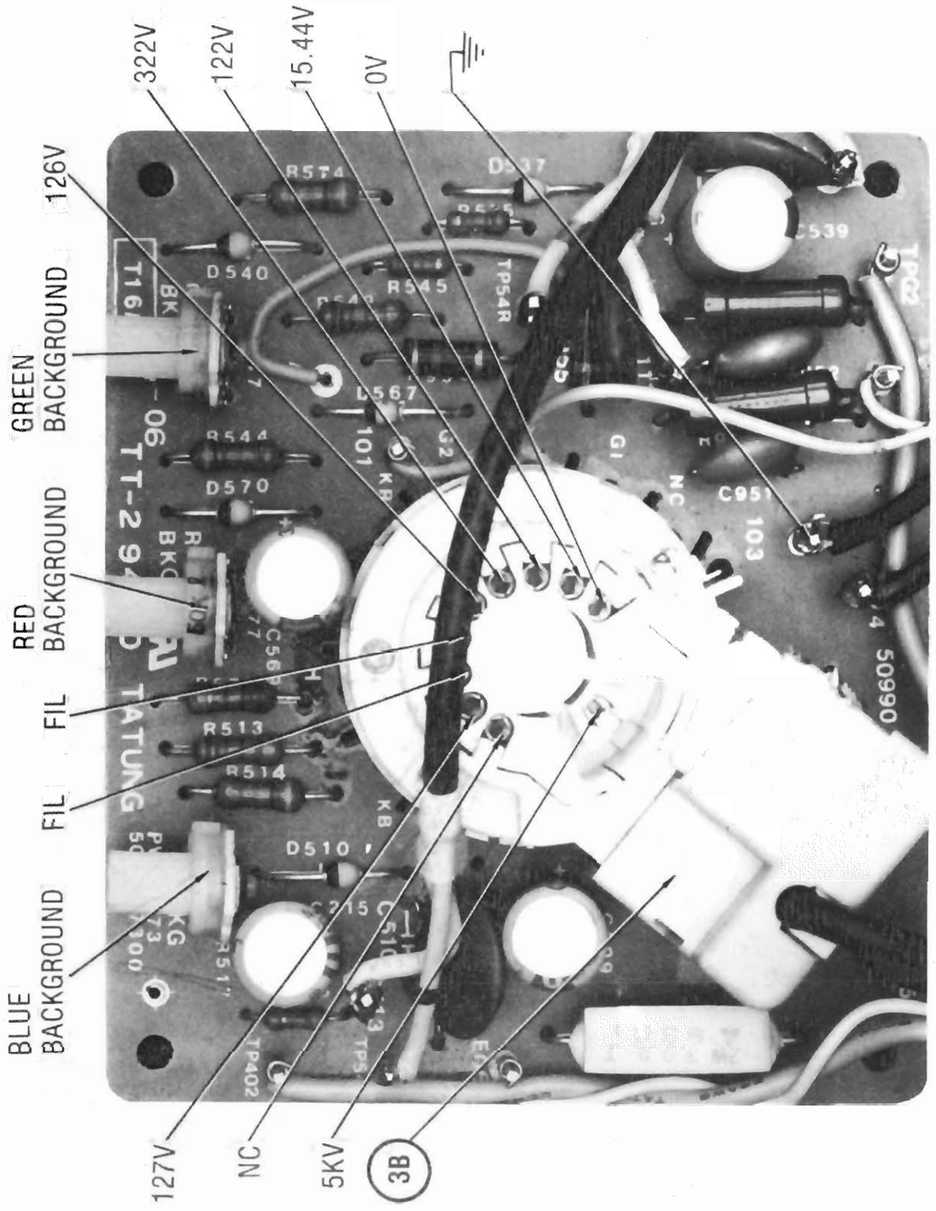
ITEM No.	RATING	MFGR. PART No.
C829 C830	.01 125VAC .01 125VAC	

CONTROLS (All wattages ½ watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
R210	Brightness	100K		
	Brightness	50K		
R215	Contrast	500		
R306	Vert Size	500		
R309	Vert Hold	5000		
R336	Vert Center	5000		
R409	Horiz Hold	5000		
R413	Horiz Phase	5000		
R434	Horiz Center	500		
R506	Blue Drive	1000		
R517	Blue Background	50K		
R536	Green Drive	1000		
R547	Green Background	50K		
R566A	Red Drive	1000		
R577	Red Background	50K		
R851	B+ Adjust	500		
R999A B	Focus Screen	(18)		

(18) R999A and B part of T403.

IBM MODEL 5153



CRT SOCKET BOARD

VIII

PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of computer malfunctions.

Check all interconnecting cables for good connection and correct hookup before making service checks.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove two caps from cabinet top and remove two screws holding cabinet to cabinet front. Remove four screws (from bottom) holding cabinet back to cabinet front and remove back.

Disconnect HV anode, CRT socket and ground leads. Remove two screws (from bottom) holding main chassis assembly to cabinet bottom and remove assembly from cabinet.

Remove four screws holding AC power assembly to power supply assembly and main chassis. Remove assembly and disconnect connectors as required.

Remove five screws holding power supply assembly to main chassis assembly and cabinet front brace and remove power supply assembly.

Remove four screws holding power supply cover and lift cover off power supply. Remove five scews holding power board to chassis, disconnect connectors and lift board out of chassis.

Remove knobs from cabinet front. Remove three screws holding control indicator assembly to cabinet front and remove assembly from cabinet.

CRT REMOVAL

CAUTION: Set employs CRT with neck assemblies permanently bonded to CRT. **Do Not** attempt to remove neck assemblies from CRT.

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Remove four screws holding CRT to cabinet front and lift CRT out of cabinet. **Do Not** lift CRT by the neck.

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Printed in U.S. of America. 84CF14927 DATE 9-84

SERVICE CHECKS

SEE INTERCONNECTING DIAGRAM, PLACEMENT CHART, AND PHOTOS TO MATCH THE NUMBER IN THE CIRCLES WITH THOSE IN THE FOLLOWING DATA FOR SERVICE CHECKS TO BE PERFORMED.

(1) POWER SUPPLY

(A) Check AC Fuse (F801).

(B) If Fuse F801 is bad, check Bridge Rectifier Diodes (D801 thru D804).

(C) Check for 120VAC at the output connector of the AC Input Board.

(D) If the 120VAC is missing, check Coil L804.

(E) Disconnect DC output connector from Power Board.

(F) Check for 115V across the DC output connector on the Power Board. If 115V is missing, check the Power Board by substitution.

(G) Check the adjustment of B+ Adjust Control (R851), see Miscellaneous Adjustments.

(2) NO RASTER

(A) Check the CRT HV Anode voltage with a HV probe.

(B) If the HV is missing, check the Horizontal Output Transistor (Q403).

(C) Check for 115V at the collector of Transistor Q403.

(D) If the 115V is missing, check Coils L404, L808, and pin 7 and 8 of the Horizontal Output Transformer (T403) for continuity.

(E) Check the Sync Processor IC (Q402) by substitution.

(F) Check the Service Switch (S301).

(G) Check the CRT with a CRT tester.

(3) NO VIDEO

(A) Check RGB connector P2 at the Computer and P201 at the Monitor for bad connections.

(B) Check the voltages on the CRT socket.

TEST EQUIPMENT AND TOOLS

TEST EQUIPMENT

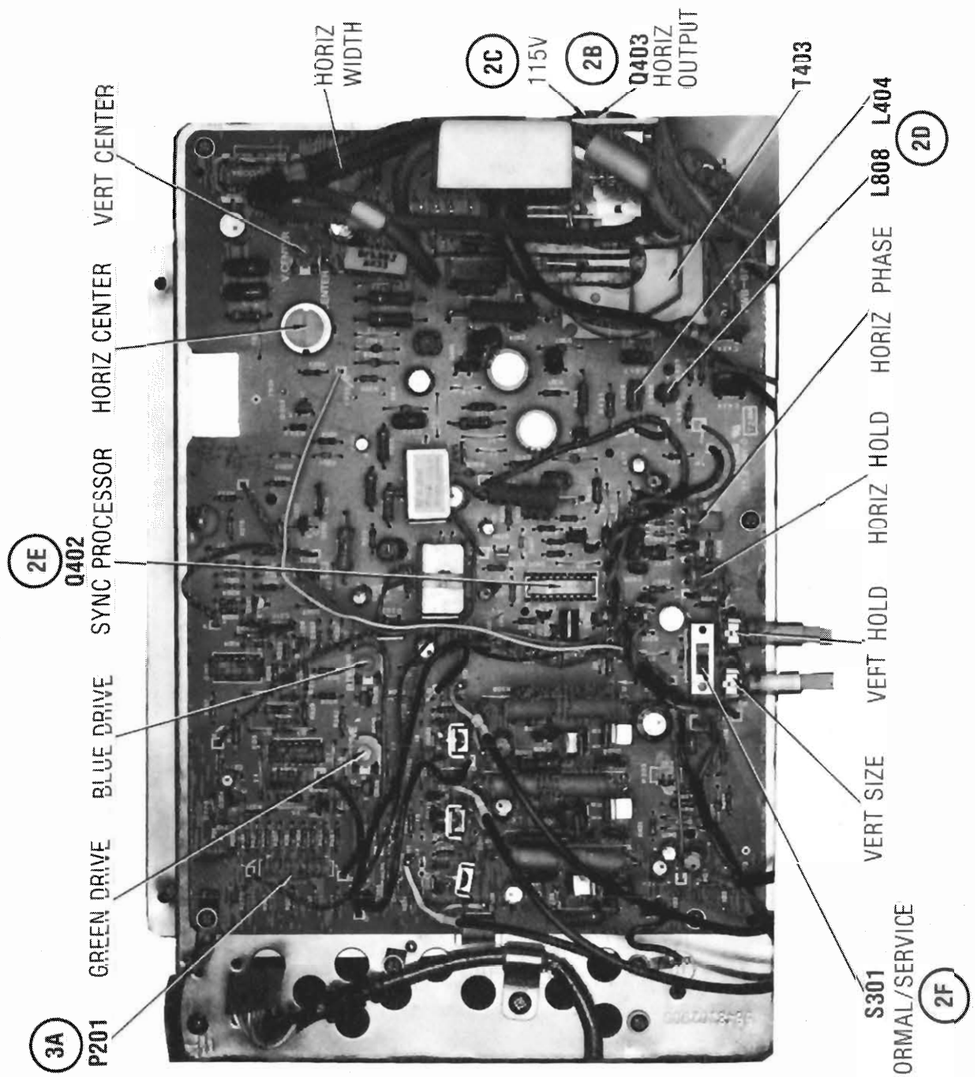
Digital Volt/Ohm Meter
High Voltage Probe
CRT Tester

TOOLS

Phillips Screwdriver
¼" Nut Driver
Soldering Iron
Desoldering Tool

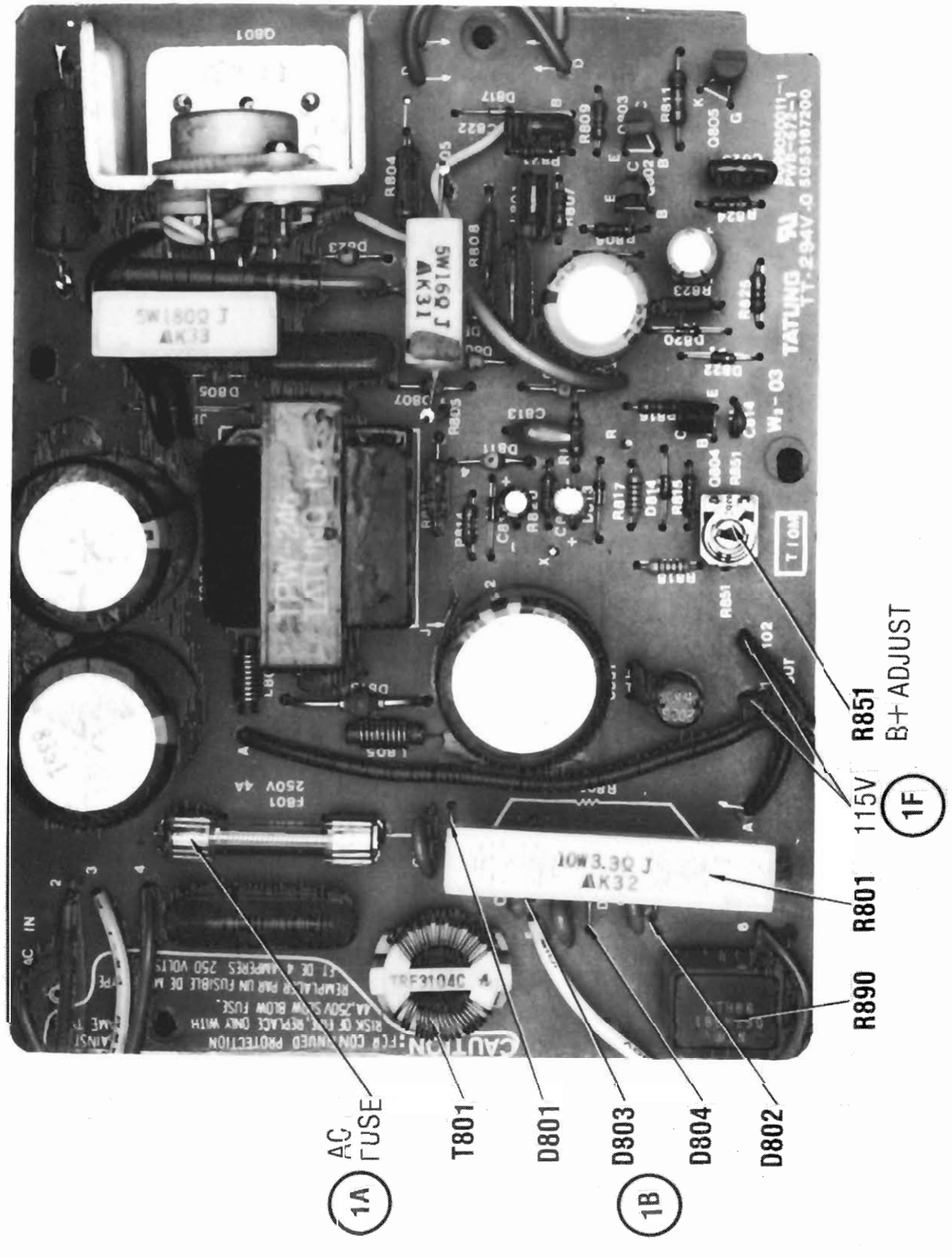
PARTS LIST AND DESCRIPTION

ITEM	PART NO.	DESCRIPTION
D801 thru D804		Bridge Rectifiers
F801		4A Fuse
L404		RF Choke
L804		AC Line Choke
L808		RF Choke
Q402		Sync Processor IC
Q403		Horiz Output Transistor
R851		B+ Adjust Control
S301		Service Switch
T403		Horiz Output Transformer



IBM MODEL 5153

CHASSIS-TOP VIEW



POWER SUPPLY BOARD

MISCELLANEOUS ADJUSTMENTS

B+ ADJUSTMENT

Connect a DC meter to TP91, low side to ground. Apply power to Monitor. Adjust B+ Adjust Control (R851) for +115V.

HORIZONTAL HOLD ADJUSTMENT

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Connect a .1μF Capacitor from TP22 to ground. Adjust Horizontal Hold Control (R409) until the bars stop (in sync) or slowly float across the screen. Remove the .1μF Capacitor.

HORIZONTAL AND VERTICAL CENTERING

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Adjust Horizontal Center Control (R434) for best horizontal centering of the raster. Adjust Vertical Center Control (R336) for best vertical centering of the raster.

HORIZONTAL PHASE CONTROL

Adjust Horizontal Phase Control (R413) to place the cursor at the left edge of the raster.

PURITY ADJUSTMENT

Degauss the CRT, if necessary. Set the Blue (R517) and Green (R547) Background Controls to MINIMUM. Advance the Red Background Control (R577) to produce a red raster. Loosen the deflection yoke and slide it back against the Purity/Convergence Assembly. Adjust the Purity Magnets to produce a vertical red stripe at the center of the screen. Slide the deflection yoke forward to produce uniform red raster. Check for pure blue and green screens by advancing the Blue (R517) and Green (R547) Background Controls one at a time.

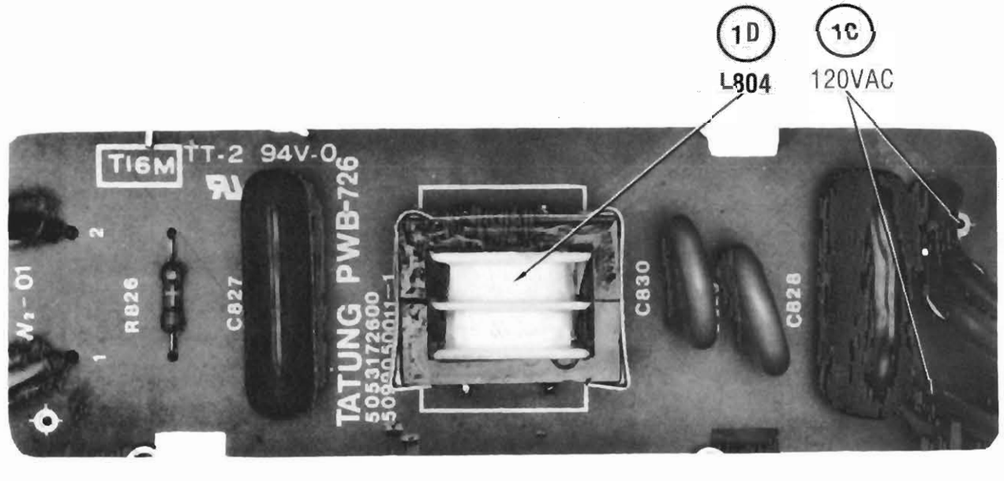
COLOR TEMPERATURE ADJUSTMENT

Set the Blue (R506) and Green (R536) Drive Controls to midrange. Set the Red (R577), Blue (R517) and Green (R547) Background Controls to MINIMUM. Set Service Switch (S301) to Service position. From MINIMUM position adjust Screen Control (R999B) to obtain a dim line of a predominate color. Adjust the two background controls of the least predominate colors to obtain a dim white line. Set Service Switch to Normal. Adjust the Blue (R506) and Green (R536) Drive Controls for a black and white picture

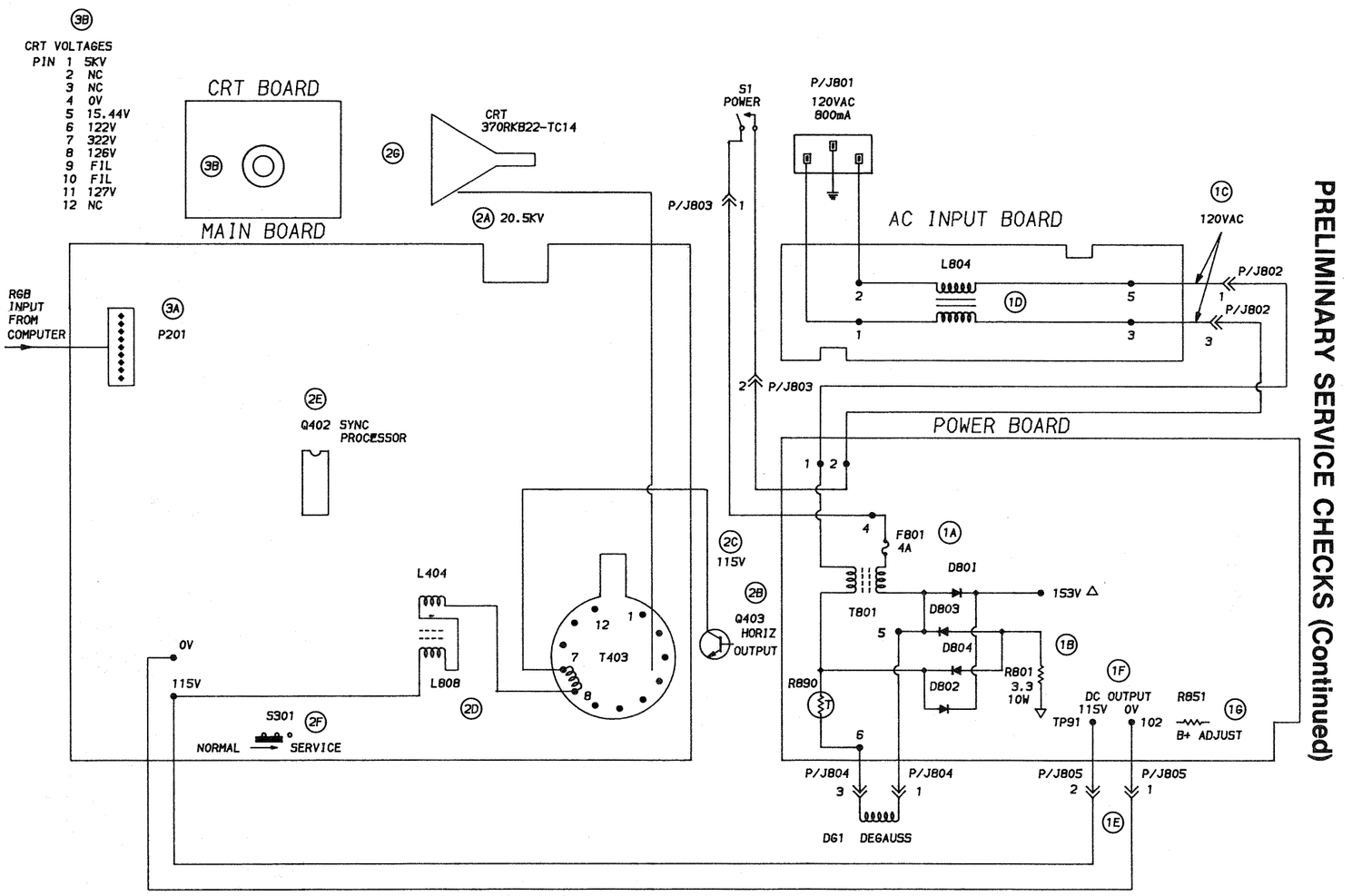
CONVERGENCE ADJUSTMENTS

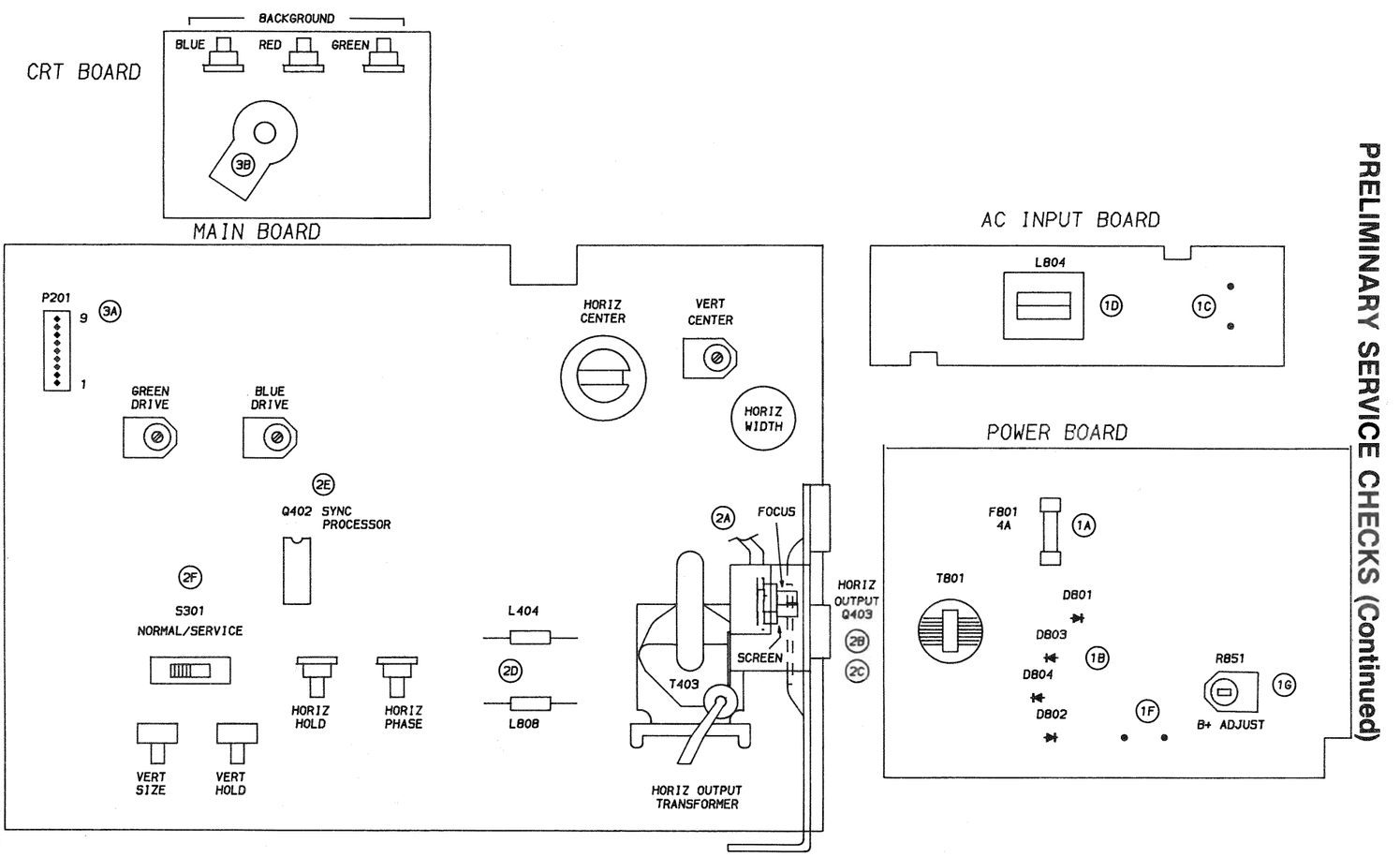
Connect a RGB video pattern generator to the antenna terminals and tune in a dot pattern. Adjust Four-pole Convergence Magnets to converge the red and blue dots at the center of the screen. Adjust Six-pole Convergence Magnets to converge the red/blue dots over the green dots at the center of the screen.

Tune in a crosshatch pattern. Remove the rubber wedges between the deflection yoke and CRT. Tilt the deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the right and left sides of the screen. Tilt the deflection yoke to the right or left to converge the horizontal lines at the top and bottom of the screen and the vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain the best overall convergence. Replace the rubber wedges.



AC INPUT BOARD


3B
CRT VOLTAGES
PIN 1 5KV
2 NC
3 NC
4 0V
5 15.44V
6 122V
7 322V
8 126V
9 FIL
10 FIL
11 127V
12 NC
CRT BOARD
CRT
370RKB22-TC14
2G
2A 20.5KV
MAIN BOARD
RGB
INPUT
FROM
COMPUTER
3A
P201
2E
Q402 SYNC
PROCESSOR
L404
L808
2D
T403
0V
115V
5301 2F
NORMAL SERVICE
S1
POWER
P/J801
120VAC
800mA
P/J803
AC INPUT BOARD
1C
120VAC
L804
1D
P/J802
2 P/J803
POWER BOARD
2C
115V
2B
Q403
HORIZ
OUTPUT
F801
4A
1A
DB01
153V △
T801
DB03
DB04
DB02
R890
R801
3.3
10W
1B
1F
DC OUTPUT
115V 0V
TP91
102
R851
B+ ADJUST
1G
P/J804
P/J805
DG1 DEGAUSS
1E


BACKGROUND
BLUE
RED
GREEN
CRT BOARD
3B
MAIN BOARD
AC INPUT BOARD
L804
1D
1C
P201
9
1
3A
HORIZ
CENTER
VERT
CENTER
HORIZ
WIDTH
GREEN
DRIVE
BLUE
DRIVE
2E
Q402 SYNC
PROCESSOR
2A
FOCUS
2F
S301
NORMAL/SERVICE
L404
2D
L808
HORIZ
HOLD
HORIZ
PHASE
HORIZ
OUTPUT
Q403
2B
2C
SCREEN
T403
VERT
SIZE
VERT
HOLD
HORIZ OUTPUT
TRANSFORMER
POWER BOARD
F801
4A
1A
T801
DB01
DB03
DB04
DB02
1B
1F
R851
1G
B+ ADJUST